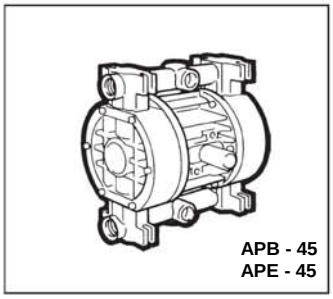
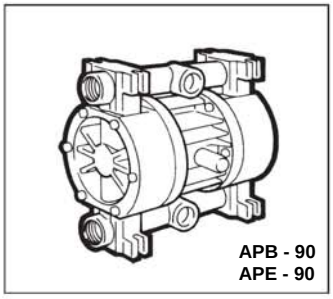
Product: **Air driven diaphragm pump**

Type:

ABP - 30
APB - 45
APB - 90
APB - 100
APB - 150
APB - 200.1
APB - 340
APB - 650
APB - 850

APE - 30
APE - 45
APE - 90
APE - 100
APE - 150
APE - 200.1
APE - 340
APE - 650
APE - 850


APB - 45
APE - 45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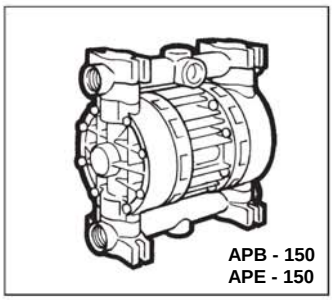
APE - 90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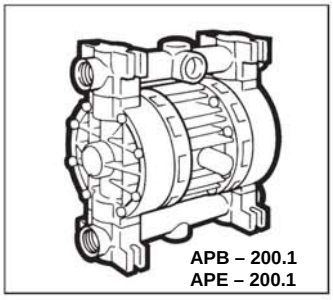
APE - 150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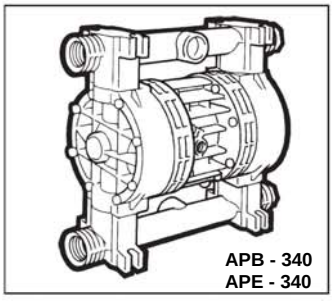
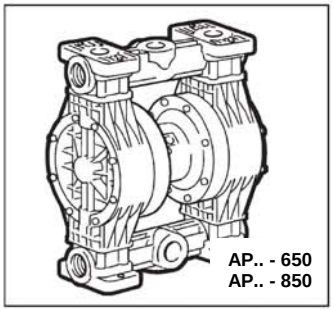
APE – 200.1


APB - 340
APE - 340


AP.. - 650
AP.. - 850

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Contents

1 General

Before commissioning and while operating the **sera** air driven diaphragm pump the regulations valid at the place of installation must be strictly observed.

The **sera** air driven diaphragm pump is delivered ready for operation. Carefully read these instructions and especially the safety instructions herein contained before putting the product into service.

1.1 Types

1.1.1 APB

sera – air driven diaphragm pumps in accordance with directive 94/9/EWG are identified as follows:

II 3G Eex c IIB T4

= Safety Markings according to DIN 40012, Appendix A

II 3G: Above-floor unit for use in zones where the presence of gases, vapours or mists during pump operation is improbable or rare and in any case for a brief time.

Eex-c: Constructional safety device (prEN 13463-5)

IIB: Excludes the following materials:
Hydrogen, acetylene, carbon disulfide

T4: Permissible temperature class.
The temperature classes take into account the various ignition points of the gases and vapours. This takes into account the possibility that a hot surface can ignite an explosive atmosphere.

1.1.2 APE

sera - air driven diaphragm pumps in accordance with directive 94/9/EWG are identified as follows:

II 2G Eex c IIB T4

Devices in Group (II), Class (2), Gas, Temperature class (T4)

= Safety Markings according to DIN 40012, Appendix A

II 2G: Above-floor device for use in zones with
Existing gases, vapours or mists which sometimes occur during normal operation (EN 1127-1, Abs. 6.3)

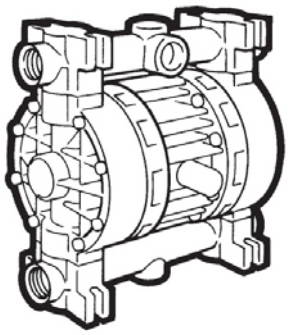
Eex-c: Constructional safety device (prEN 13463-5)

IIB: Constructional safety device :
Hydrogen, acetylene, carbon disulfide

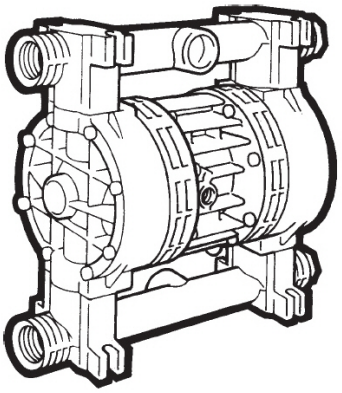
T4: Permissible temperature class.
The temperature classes take into account the various ignition points of the gases and vapours. This takes into account the possibility that a hot surface can ignite an explosive atmosphere.

1.2 Type series

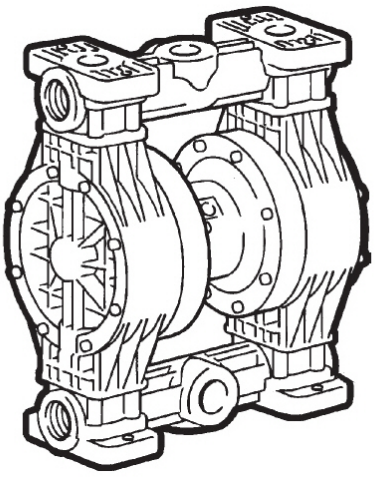
1.2.1 Type AP.. - 30 to AP.. – 200.1



1.2.2 Type AP.. - 340



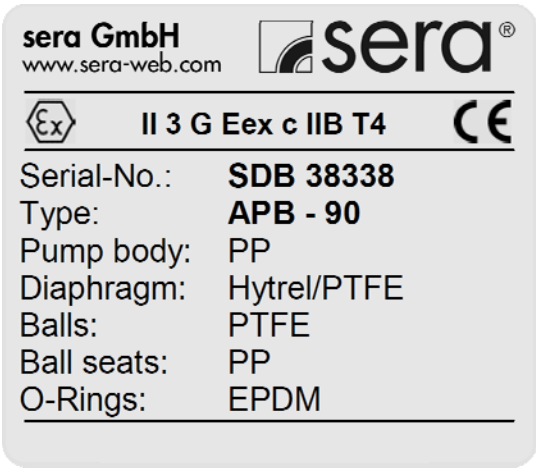
1.2.3 Type AP.. - 650 and AP.. - 850



1.3 Type plate

The type plate includes the type, serial number and the materials used. These data must be kept available for contact with **sera** with respect to the pump.

Type plate (example)



2 Medium

The diaphragm pump is suitable for feeding low-viscosity and viscous fluids. Please note that the flow capacity is diminished when using viscous media.

CAUTION!

Flammable liquids may be fed
(Note gas group and Ex zones as per Directive 94/9/EG.)
APB series for use in Zone 2 only.
APE series may be used also in Zone 1.
The combination of ball seats and valve balls made of stainless steel is not permitted.
Possible combination:
Ball seats made of stainless steel and valve balls made of PTFE.

3 Safety Instructions

3.1 Quality Instructions

Read these operating instructions carefully before the unit is commissioned or serviced. Observance of these operating instructions and, in particular, safety instructions, helps to

- Avoid danger to staff, machines, and environment.
- Increase the reliability and service life of the equipment and the entire installation.
- Reduce expenses for repairs and downtimes.

The **sera** quality management and quality assurance system for pumps, installations, fittings and compressors is certified according to ISO 9001:2008.
The **sera** air driven diaphragm pump is compliant with the valid safety requirements and accident prevention regulations.

CAUTION!

Always keep these operating instructions within reach at the workplace of the pump!

CAUTION !

Pay attention to the safety data sheet of the medium conveyed! Take appropriate accident prevention measures to avoid that operators are endangered by the used conveying media!

3.2 Marking of Instructions

Information signs which are directly attached to the pump, such as arrows indicating the direction of rotation or signs for fluid connections must be adhered to and kept in a legible condition.

3.3 Qualification and Training of Personnel

The personnel who operate, maintain, carry out inspections or install the machine must be suitably qualified for their tasks. The operator has to define clearly the responsibility, and the supervision of the personnel. If the personnel do not have the required knowledge, an adequate training is to be carried out by the operator. Such a training can be realized - if required - upon order of the operator of the pump by the manufacturer / supplier. The operator has to ensure furthermore that the personnel have understood the contents of the operating instructions completely.

CAUTION !

Personnel assigned to install, inspect and maintain must have appropriate technical training together with suitable knowledge in the field of potentially explosive atmospheres and must be aware of the associated risks!

CAUTION !

Any use beyond the instructions in this manual will invalidate the required safety and protection properties with respect to the risk of explosion!

3.4 Dangers in Case of Inobservance of the Safety Instructions

The inobservance of the safety instructions may result in personal injuries, hazards to the environment and damages to the pump.

The inobservance of the safety instructions may have the following consequences:

- Failure of important functions of the pump/unit
- Failure of prescribed methods for maintenance and upkeep
- Danger to persons by mechanical and chemical influences
- Danger to the environment due to leakage of hazardous media

3.5 Safety-Conscious Working

The safety instructions mentioned in these operating instructions, the national regulations for accident prevention as well as all internal working-, operating and safety instructions of the operator must be observed.

3.6 Safety Instructions for the Operator

Leakages (e.g. at the shaft seal) of dangerous media conveyed (e.g. explosive, poisonous, hot) must be discharged in such a way, that no dangers arise to persons or environment. The legal regulations are to be adhered to.

3.7 Safety Instructions for Maintenance, Inspection and Installation

The operator has to ensure that all maintenance, inspection and installation tasks are carried out by authorized and sufficiently qualified personnel, who have carefully read and understood the operating instructions.

Only those spare parts and wearing parts are to be used that satisfy the requirements of the relevant operating conditions.

Only loosen screws and connections when the system is not under pressure.

3.8 Arbitrary Modification and Spare Parts Production

Modifications of or changements to the pump are only allowed after previous agreement of the manufacturer. Original spare parts and accessories that are authorized by the manufacturer are essential for safety reasons.
Each claim of warranty against the operator becomes void when using non-authorized parts or modifying the diaphragm pump without anyone's permission.

3.9 Inadmissible Operating Procedures

The operational safety of the air driven diaphragm pump can only be guaranteed in case of proper use in accordance with section 3.10 of the operating instructions.

CAUTION !

The following uses of the air driven diaphragm pumps are not permitted:

- **Operation as a vacuum pump / generating a vacuum.**
- **Use as a shut-off fitting.**
- **Siphoning powdered products.**
- **Feeding rapidly sedimenting media.**
- **Feeding media whose chemical composition is not compatible with the pump materials.**
- **Feeding foods.**

3.10 Proper Use

Use the **sera** air driven diaphragm pump only for the purpose indicated in the corresponding confirmation of order.

If the pump is to be used for other purposes, it is required to consult **sera** beforehand to settle whether the diaphragm pump is suitable for the new usage!

Criteria for the proper use of the air driven diaphragm pump are:

- Consider the characteristics of the medium conveyed (refer to the safety and product data sheet of the used medium – the safety data sheet is to be provided by the supplier/operator of the medium)
- Stability of the materials which have contact with the medium conveyed
- Operating conditions at the place of installation
- Pressure and temperature of the medium conveyed
- Control air pressure

3.11 Personal Protection for Service and Maintenance

It is required to consider the recommended safety measures included in the German ordinance concerning hazardous materials (§ 14 of Safety Data Sheet) and/or the relevant national safety regulations applying to the usage of the medium conveyed.

In case of accidents pay attention to the following possible emissions:

- Escaping of liquids and vapours
- Noise emissions (noise level)

Emissions must be monitored by control systems of the total installation.

CAUTION !
Use protective clothing, gloves, breathing mask and suitable goggles for face protection!

CAUTION !
Personal protective equipment must be provided by the equipment operator at all times!

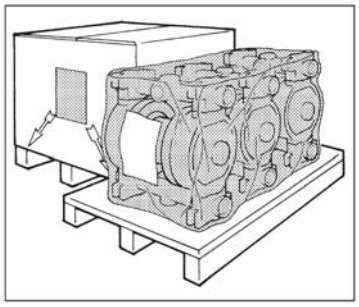
4 Transportation and Storage

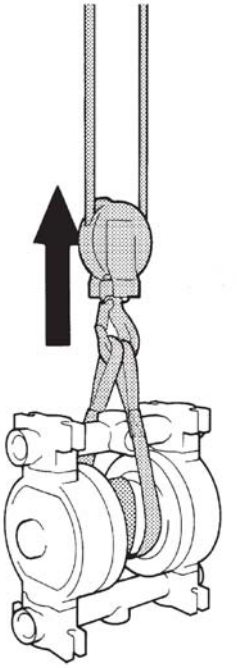
4.1 General

Before shipment **sera** products are tested for proper functioning and quality.

4.2 Transportation

The air driven diaphragm pump is shipped/transported in a carton or on a pallet depending on the weight





The air driven diaphragm pump should be transported using an appropriate lift truck.

4.3 Storage

An undamaged packing protects the pump during subsequent storage and should only be opened when the diaphragm pump will be installed.

A proper storage will increase the service life of the diaphragm pump. Proper storage means avoidance of negative influences, such as heat, humidity, dust, chemicals etc.

The following storage conditions must be observed:

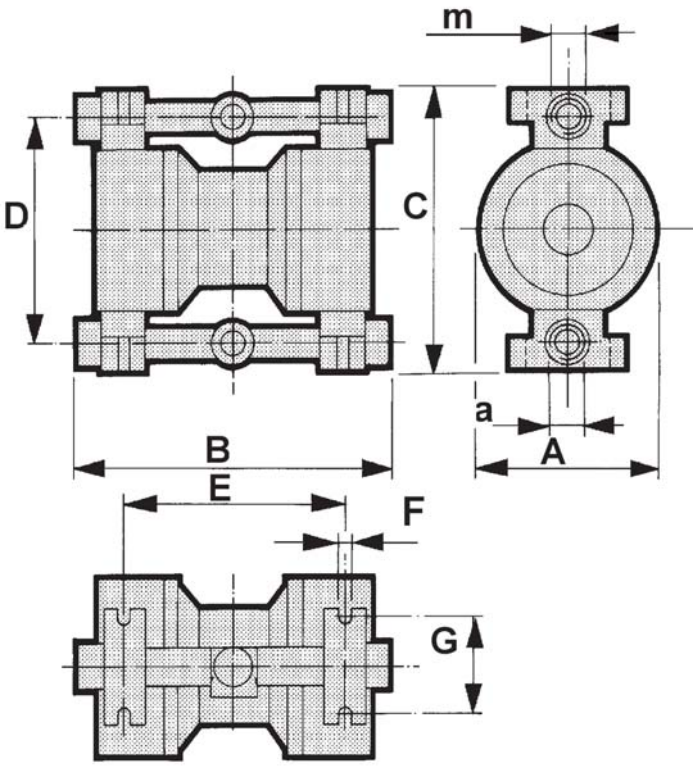
- Storage place: cool, dry, dust-free and slightly ventilated
- Storage temperature between –10°C and +45°C
- Humidity of air not more than 50%

If these values are exceeded, products made from metal should be sealed in foil and protected against condensation water using suitable dessicants.

Do not store solvents, fuels, lubricants, chemicals, acids, disinfectants and similar together with the product in the storage room.

5 Technical data

5.1 Dimensions



Dimensions									
Pump type	**Design**	**m / a**	**A**	**B**	**C**	**D**	**E**	**F**	**G**
AP.. - 30	Plastic	G 1/2	120	165	168	136	120	6	70
	AISI316	G 1/2	120	177	171	140	120	6	70
	Aluminium	G 1/2	120	164	172	139	124	6	70
AP.. - 45	Plastic	G 1/2	153	247	241	198	168	6,5	85
	AISI316	G 1/2	153	230	232	196	164	9	79
	Aluminium	G 1/2	153	241	234	198	168	6,5	85
AP.. - 90	AISI316	G 1	170	305	271	217	214	8	93
AP.. - 100	Plastic	G 1	170	308	274	219	213	6,5	92
	Aluminium	G 1	170	308	277	220	213	8	93
AP.. - 150	Plastic	G 1	201	329	325	263	228	8	110
AP.. - 200.1	Plastic	G 1 1/4	220	399	386	302	267	8	122
	AISI 316	G 1 1/4	220	380	390	307	266	8	125
	Aluminium	G 1 1/4	220	394	388	305	265	8	125
AP.. - 340	Plastic	G 1 1/2	254	493	492	416	326	8,5	138
	AISI 316	G 1 1/2	254	475	493	416	327	9,5	138
	Aluminium	G 1 1/2	254	479	491	415	327	8	138
AP.. - 650	Plastic	G 2	350	580	726	606	400	14	200
	AISI 316	G 2	348	470	704	582	364	11	250
	Aluminium	G 2	350	566	621	521	364	12,5	182,5
AP.. - 850	Plastic	G 3	350	585	726	606	400	14	200
	AISI316	G 3	350	546	826	682	381	11	300
	Aluminium	G 3	350	580	806	694	360	15	272

5.2 Performance data APB

Type	max. flow capacity [ltr./min.]	max. air supply pressure [bar]	Noise Level* [dB(A)]	Control air connection	Suction and pressure connec-tions	max. suction height [m] dry	max. suction height [m] wet	max. solid size [mm]	Weight Material	Weight [kg]
APB - 30	30	7	80	G 1/4	G 1/2	5	7	2,0	PP	1,6
									PVDF-CFK	1,9
									Aluminium	2
									AISI 316	3,8
APB - 45	50	7	80	G 3/8	G 1/2	5	7	3,0	PP	3,6
									PVDF-CFK	4,2
									Aluminium	4,2
									AISI 316	6,5
APB - 90	90	7	82	G 3/8	G 1	5	7	4,0	AISI 316	10,5
APB - 100	100	7	82	G 3/8	G 1	6	7	4,0	PP	5,0
									PVDF-CFK	6,5
									Aluminium	6,5
APB - 150	150	7	82	G 3/8	G 1	5	7	4,0	PP	7,5
									PVDF-CFK	8,5
APB - 200.1	220	7	82	G 1/2	G 1 1/4	5	7	5,0	PP	12
									PVDF-CFK	14
									Aluminium	16
									AISI 316	21
APB - 340	340	7	82	G 1/2	G 1 1/2	6	7	6,0	PP	16
									PVDF-CFK	20
									Aluminium	21
									AISI 316	32
APB - 650	650	7	82	G 1/2	G 2	5	7	8,0	PP	54
									PVDF-CFK	65
									Aluminium	49
									AISI 316	54
APB - 850	850	7	82	G 3/4	G 3	5	7	10,0	PP	56
									PVDF-CFK	67
									Aluminium	
									AISI 316	

***** at 5 bar control air pressure and valve balls made of plastic

5.3 Performance data APE

Type	max. flow capacity [ltr./min.]	max. air supply pressure [bar]	Noise level [dB(A)]	Control air connection	Suction and pressure connec-tions	max. suction height [m] dry	max. suction height [m] wet	max. solid size [mm]	Weight Material	Weight [kg]
APE - 30	30	7	80	G 1/4	G 1/2	5	7	2,0	PP	1,6
									PVDF-CFK	1,9
									Aluminium	2
									AISI 316	3,8
APE - 45	50	7	80	G 3/8	G 1/2	5	7	3,0	PP	3,6
									PVDF-CFK	4,2
									Aluminium	4,2
									AISI 316	6,5
APE - 90	90	7	82	G 3/8	G 1	5	7	4,0	AISI 316	10,5
APE - 100	100	7	82	G 3/8	G 1	6	7	4,0	PP	5,0
									PVDF-CFK	6,5
									Aluminium	6,5
APE - 150	150	7	82	G 3/8	G 1	5	7	4,0	PP	7,5
									PVDF-CFK	8,5
APE - 200.1	220	7	82	G 1/2	G 1 1/4	5	7	5,0	PP	12
									PVDF-CFK	14
									Aluminium	16
									AISI 316	21
APE - 340	340	7	82	G 1/2	G 1 1/2	6	7	6,0	PP	16
									PVDF-CFK	20
									Aluminium	21
									AISI 316	32
APE - 650	650	7	82	G 1/2	G 2	5	7	8,0	PP	54
									PVDF-CFK	65
									Aluminium	49
									AISI 316	54
APE - 850	850	7	82	G 3/4	G 3	5	7	10,0	PP	56
									PVDF-CFK	67
									Aluminium	
									AISI 316	

***** at 5 bar control air pressure and valve balls made of plastic

5.4 Performance curves

CAUTION !

In order to achieve an optimal service life, the operating parameters of the pumps are to be approximately in the middle of the performance diagram for normal operation.

= Air supply pressure

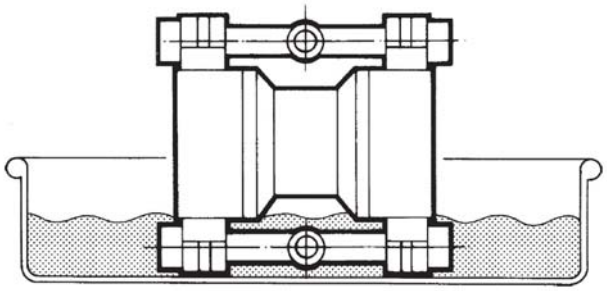
= Air consumption Nl/min.

(Performance curves of single types see pages 9 – 12.)

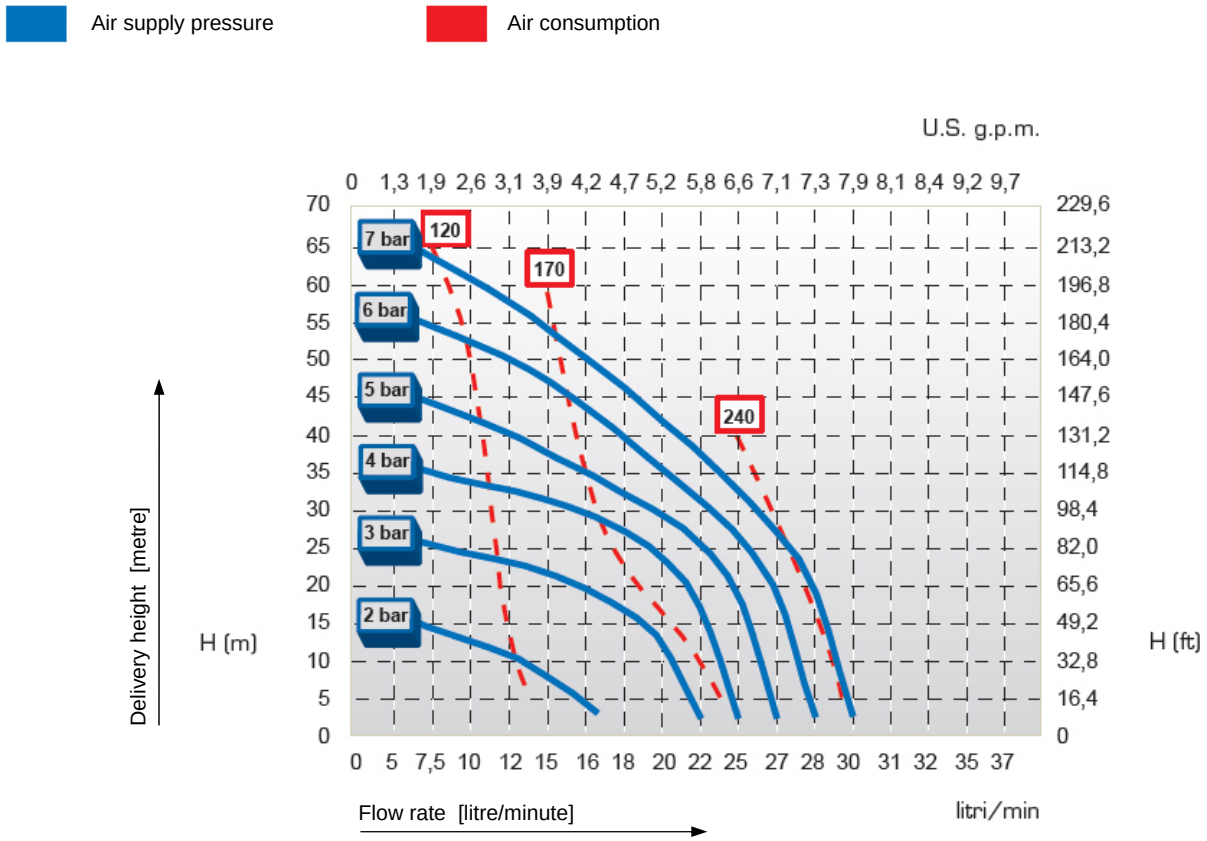
CAUTION !

When the suction and pressure lines are separate, the total capacity may be reduced by more than 50 %.

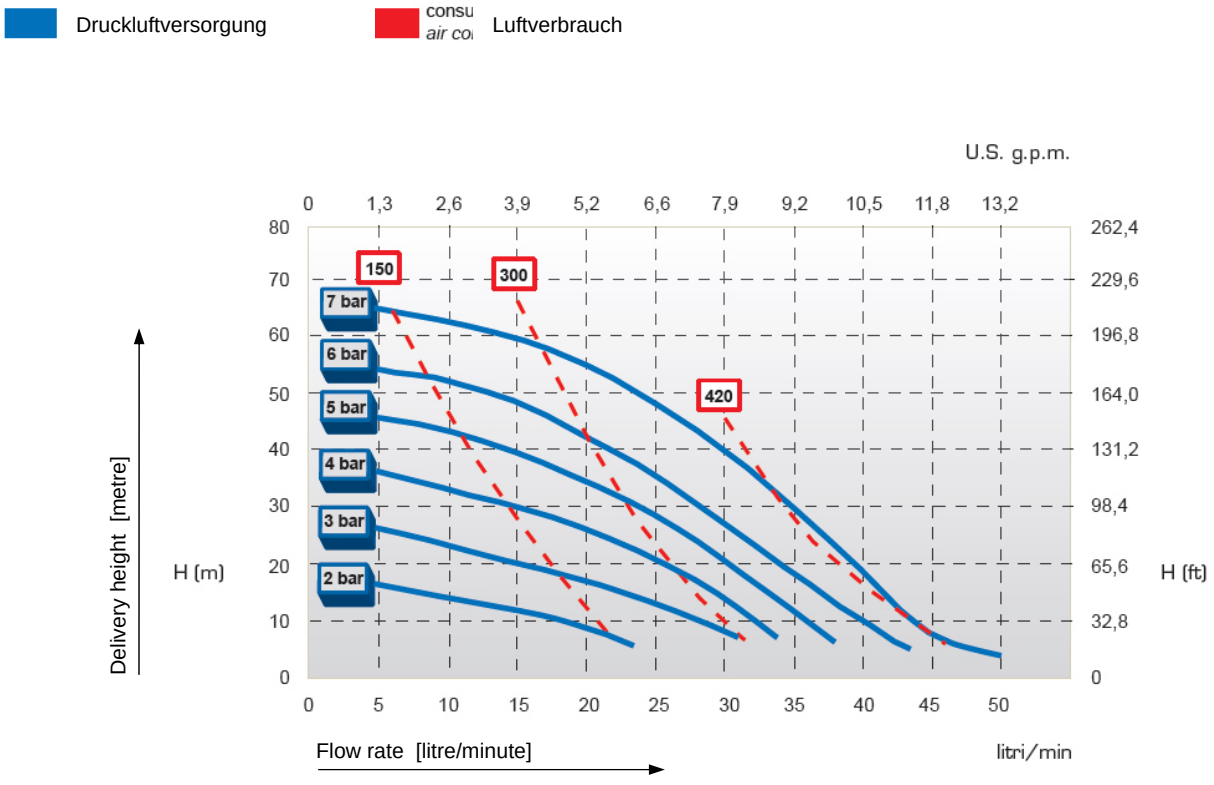
Solids contents and viscous properties of the medium as well as greater suction heights lead to a reduction of the capacity.
The performance curves represent average values and may vary according to pump configuration. The measured values were determined with submerged suction joints and water at 18 C.



5.4.1 Performance curve (AP.. - 30)

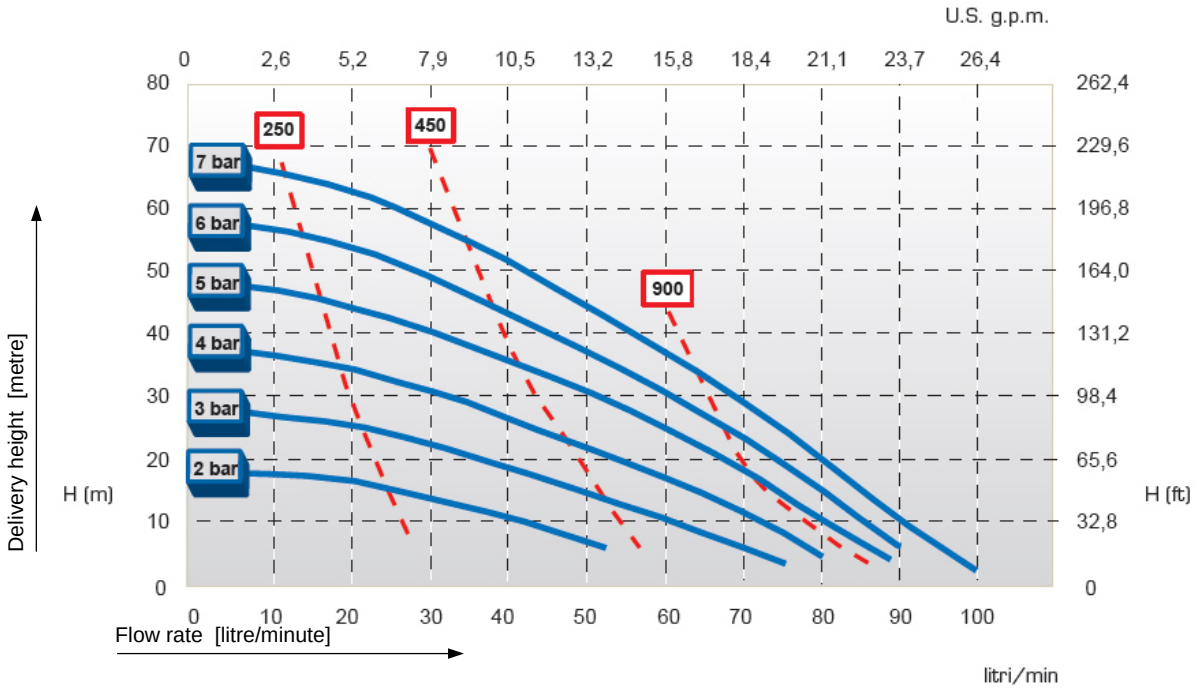


5.4.2 Performance curve (AP.. - 45)



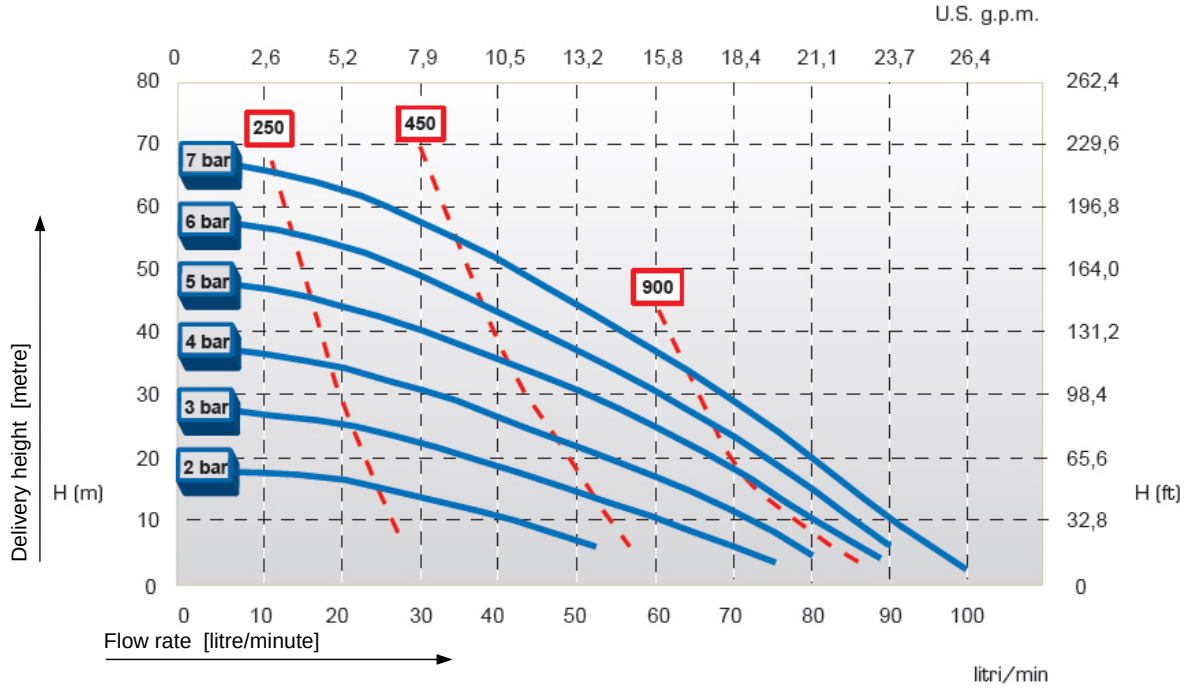
5.4.3 Performance curve (AP.. - 90)

Air supply pressure Air consumption



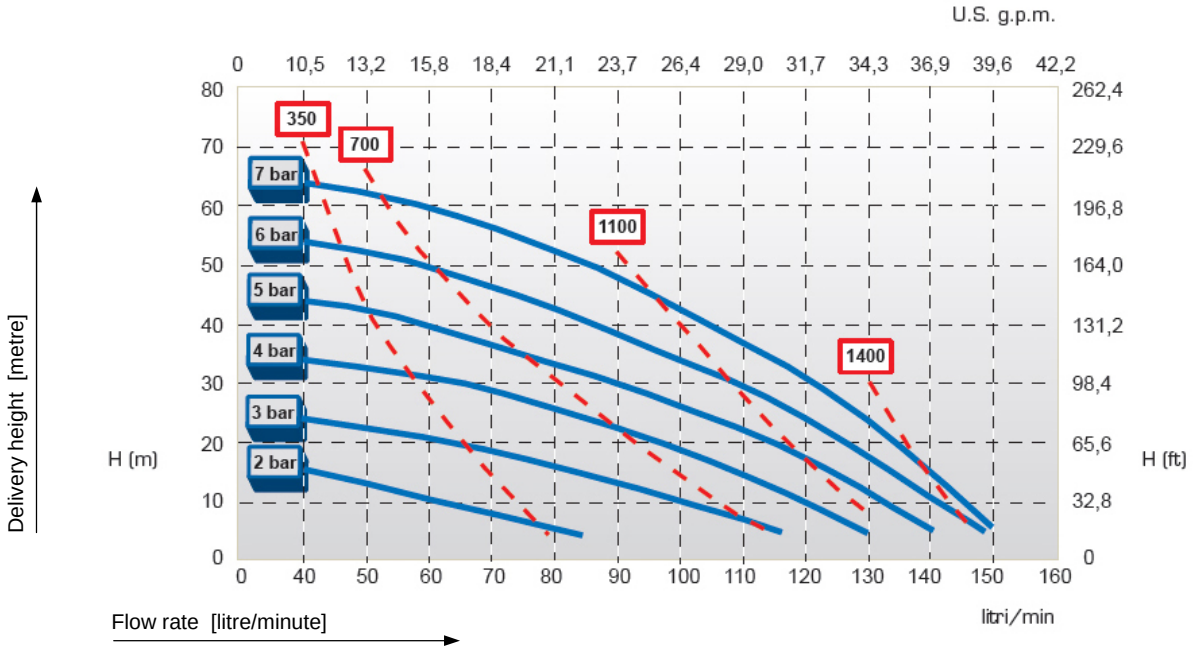
5.4.4 Performance curve (AP.. - 100)

Air supply pressure Air consumption



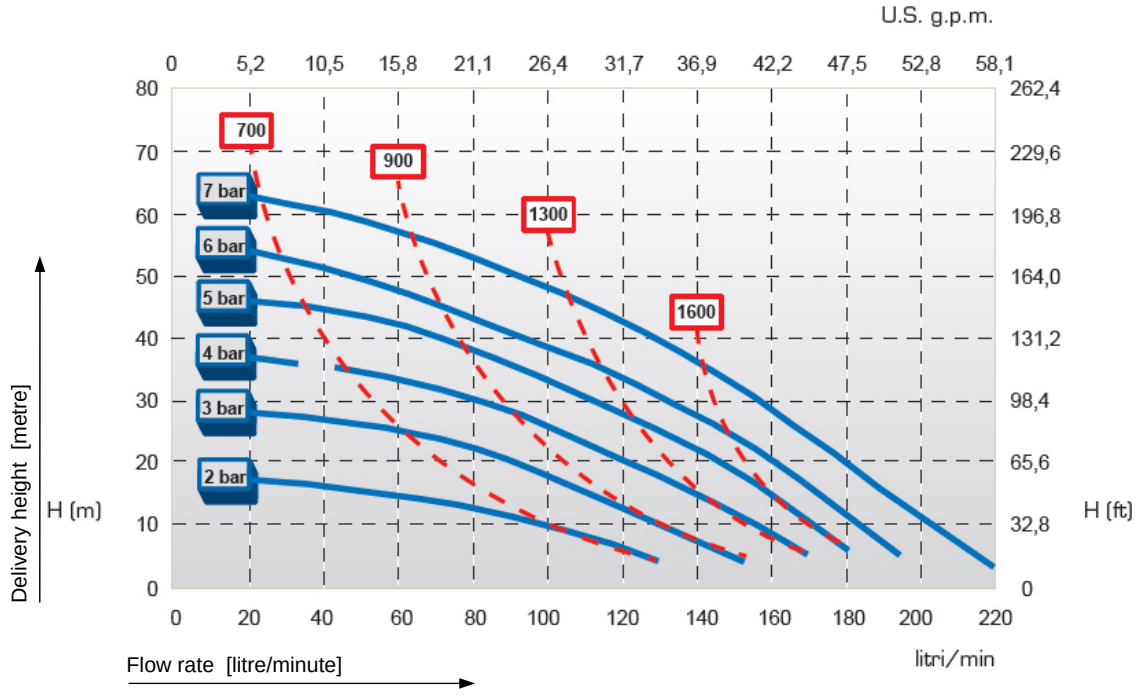
5.4.5 Performance curve (AP.. - 150)

Druckluftversorgung Luftverbrauch



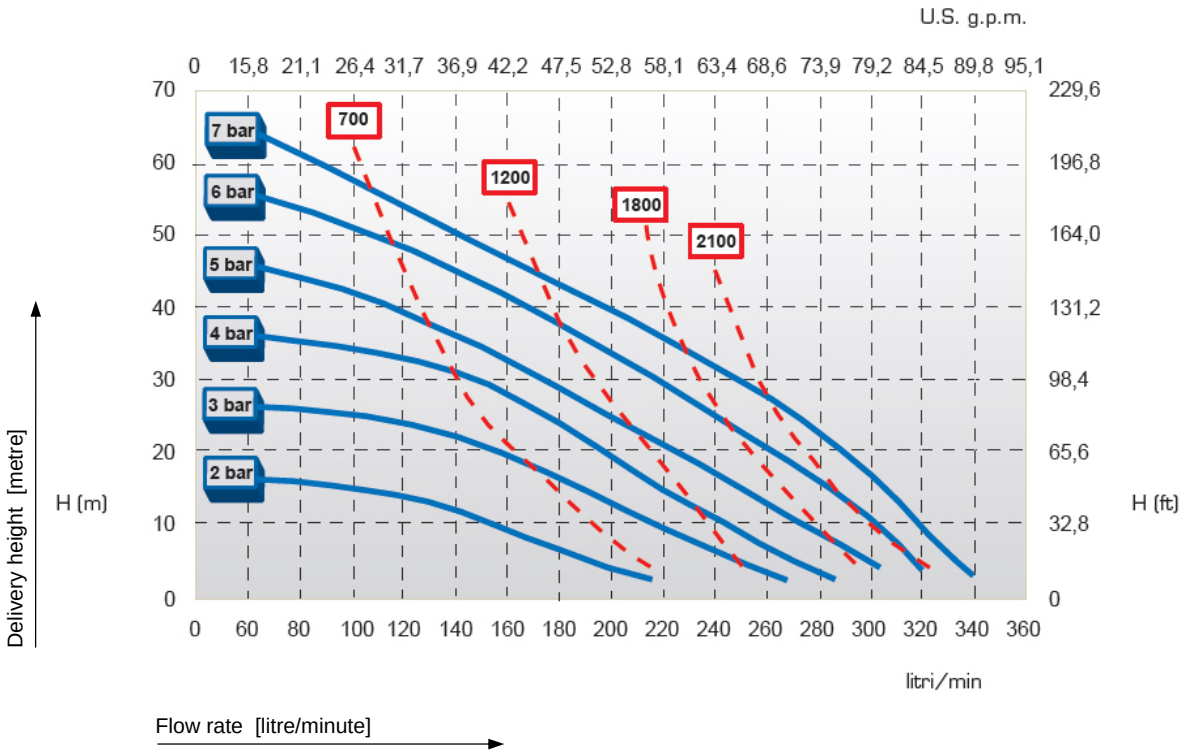
5.4.6 Performance curve (AP.. – 200.1)

Druckluftversorgung Luftverbrauch



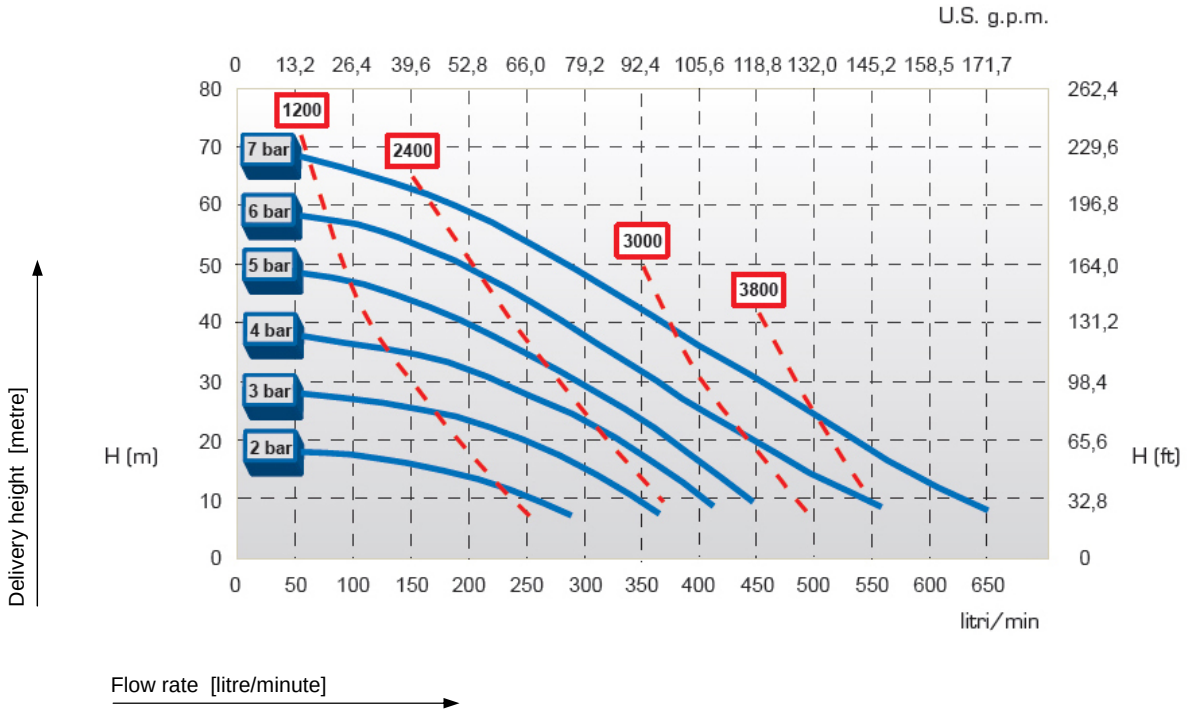
5.4.7 Performance curve (AP.. - 340)

Druckluftversorgung Luftverbrauch



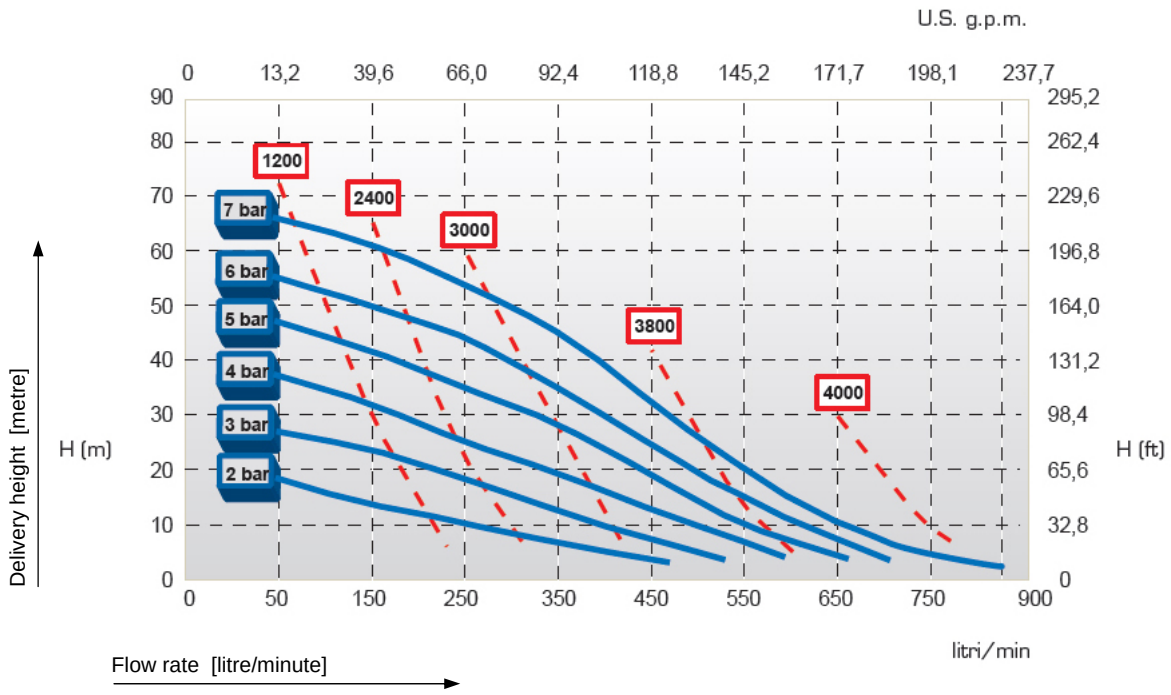
5.4.8 Performance curve (AP.. - 650)

Druckluftversorgung Luftverbrauch



5.4.9 Performance curve (AP.. - 850)

Druckluftversorgung Luftverbrauch



6 Functional description

sera – Air driven diaphragm pumps are displacement pumps which can run dry with no harm to the pump.

They are driven by dry, non-lubricated compressed air.

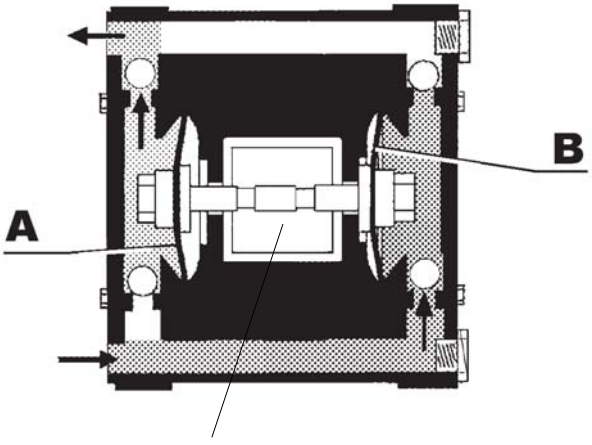
The control valve ensures that the air chambers behind the diaphragms are alternatingly supplied with compressed air.

One diaphragm is pushed to the front
= Pressure stroke (**A**)

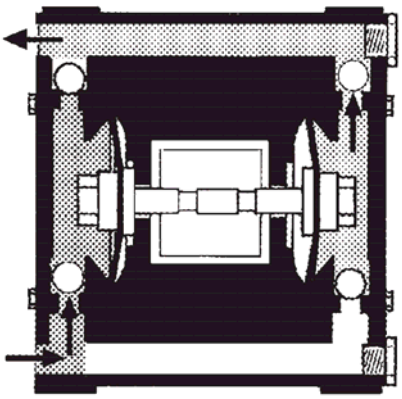
and the other to the rear
= Suction stroke (**B**).

The special construction of the control valve ensures that the pumps are always driven and cannot come to an undesired stop.

The valve balls open and close in stroke rhythm with the diaphragms.



Control valve



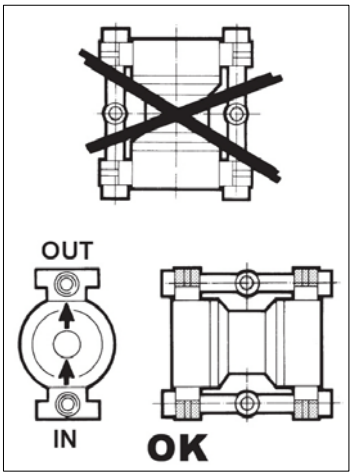
7 Setup / Installation

7.1 Setup

When setting the air driven diaphragm pumps in place, be sure that the suction and pressure connections are oriented properly.

CAUTION !

OUT = Output (pressure side) **= TOP !**
IN = Inlet (suction side) **= DOWN !**



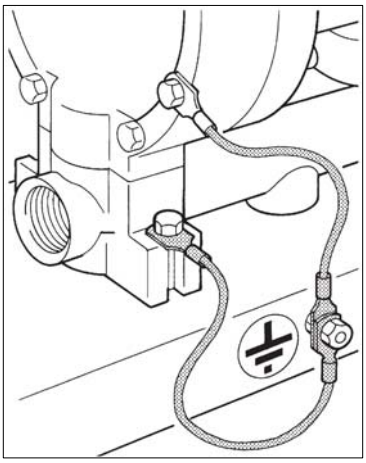
When installing the air driven diaphragm pump, provide for sufficient space for later maintenance work.

7.2 Grounding (APE-series)

Air driven diaphragm pumps made of conductive material, which should be used for feeding flammable media, must be sufficiently grounded to prevent the risk of explosion or fire.

CAUTION !

The air driven diaphragm pump must always be grounded separately from other devices. No ground or improper grounding renders the required safety regulations with respect to explosion hazard ineffective.



A high-capacity ground with appropriate cable cross-section must be used!

7.3 Connecting the lines

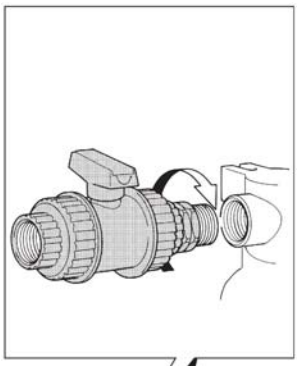
After setting up the air driven diaphragm pump, the suction and pressure line must be connected to the pump.

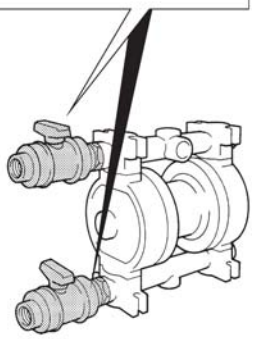
CAUTION !

When installing suction and pressure lines, ensure that the materials used are resistant to the medium.

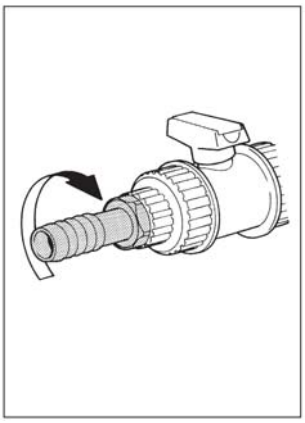
A shut-off fitting (e.g. ball cock) must be installed on the pump output.
The nominal size of the shut-off fitting may not be smaller than the nominal size of the pump.

Closing the pressure line prevents the medium from running out during maintenance work, for example.





Install hose nozzles when connecting continuing lines (suction and pressure side).



Continuing fittings are not included in the scope of delivery, but are optionally available with the **sera**.

CAUTION !

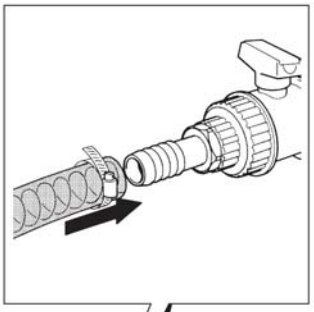
The supply pressure may amount to several bar. The max. permissible pump pressure however must never be exceeded!

CAUTION!

The hose lines which are connected should be flexible and spiral or mesh reinforced.
The inside diameter of the hose line may not be less than the nominal size at the output of the pump.
Filters and other fittings installed on the suction line must be correspondingly dimensioned.
When using viscous media, lines with an enlarged cross-section must be used.

Connect the lines to the corresponding connection elements.

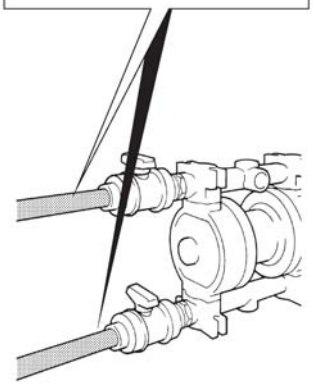
Be sure that the suction and pressure lines are connected to the correct points on the pump.



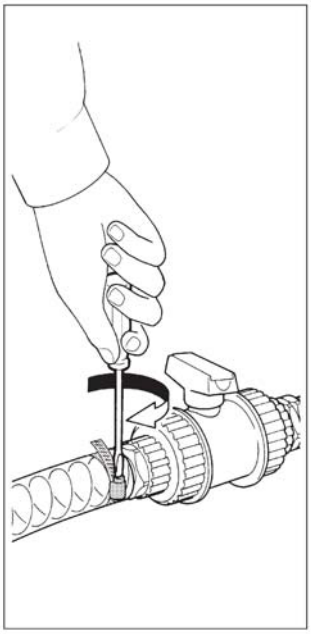
Note instructions attached to the pump:

Suction side =
Inlet

Pressure side =
Output



The hose lines are to be attached using appropriate hose clamps.



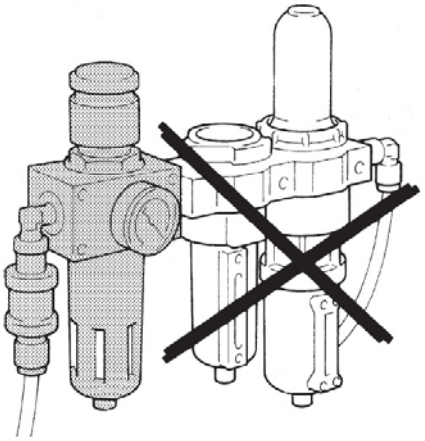
CAUTION !

Use of rigid piping may result in strong vibration and damage to the pump.

7.4 Connecting the compressed air supply

CAUTION !

The control air for supplying the air driven diaphragm pump must be dry and free of oil and solid particles.



Filter only **No oil**

A check valve must be installed at the compressed air terminal of the pump as illustrated.

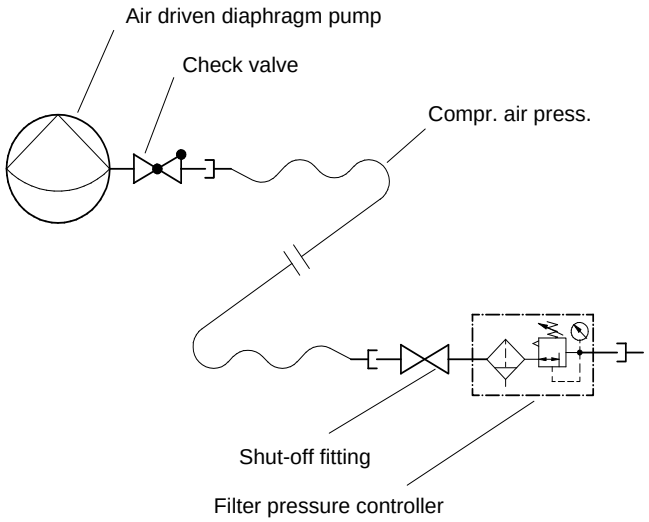
A manometer must be installed directly before the shut-off fitting to monitor the supply air pressure while the pump is running.

CAUTION !

The pressure of the control air should be less than 2 bar and not greater than 7 bar

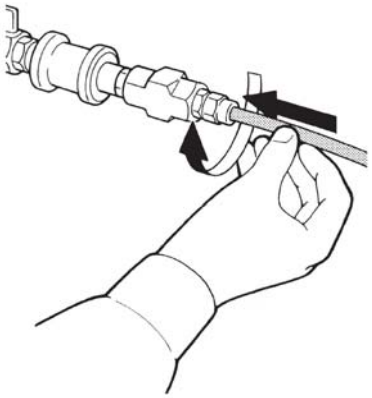
As an option, **sera** offers a complete compressed air supply unit for the air driven diaphragm pump (see section 13 „Accessories“).

(compressed air supply as per **sera** – Data Sheet No. 10452)



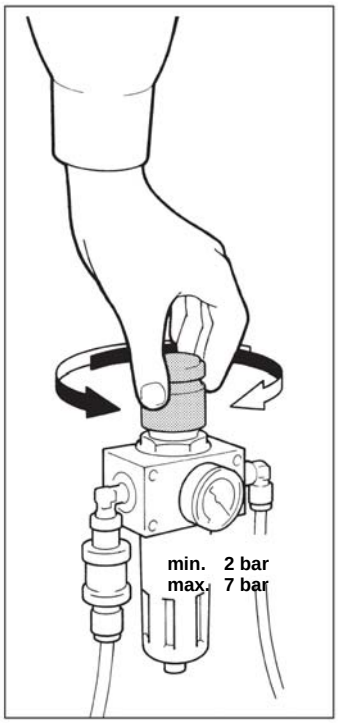
Recommended diameter for control air pipes:	
Pump type	**d (internal) x d (external) [mm]**
AP.. - 30	6 x 8
AP.. - 45	6 x 8
AP.. - 90	6 x 8
AP.. - 100	6 x 8
AP.. - 150	6 x 8
AP.. – 200.1	8 x 10
AP.. - 340	8 x 10
AP.. - 650	8 x 10
AP.. - 850	8 x 10

Connect the control air lines. Use care when installing to prevent undesired air loss.



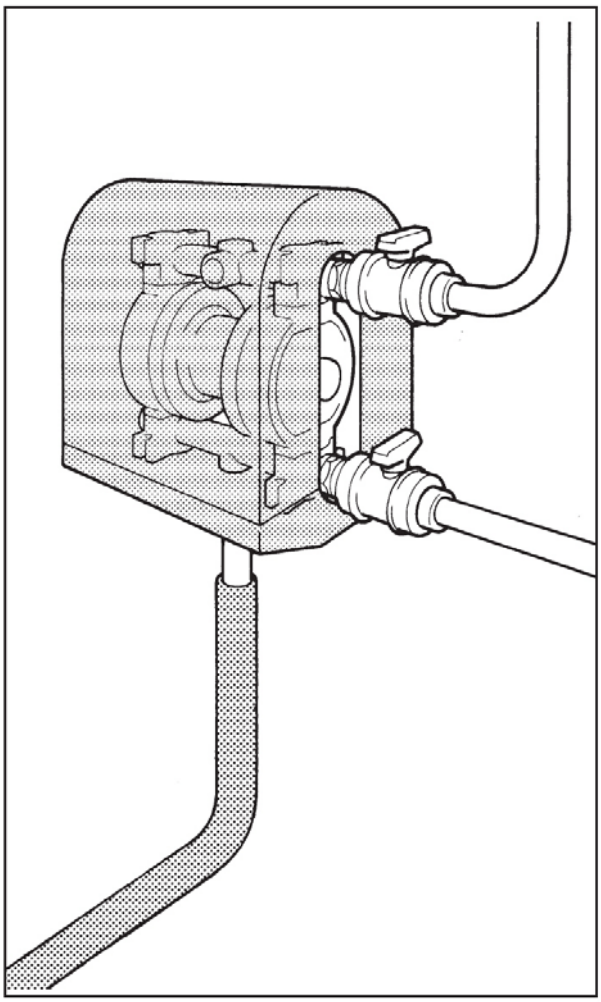
Set the pressure of the control air so that a pressure of from 2 to 7 bar is ensured during pump operation.

- Lower pressures affect optimum function of the pump.
- Higher pressures will result in diaphragm rupture and increase the risk of medium leakage.



When used to pump hazardous media, provide a spray guard on the air driven diaphragm pump as illustrated.

Under some circumstances it can happen that the medium leaks out of the pump during and following a fault condition. Leaked medium must be collected and properly disposed of.



CAUTION !

If a diaphragm rupture is not immediately recognised and aggressive media are used, it can happen that these media enter the air circuit and are blown into the environment through the air outlet (noise absorber).

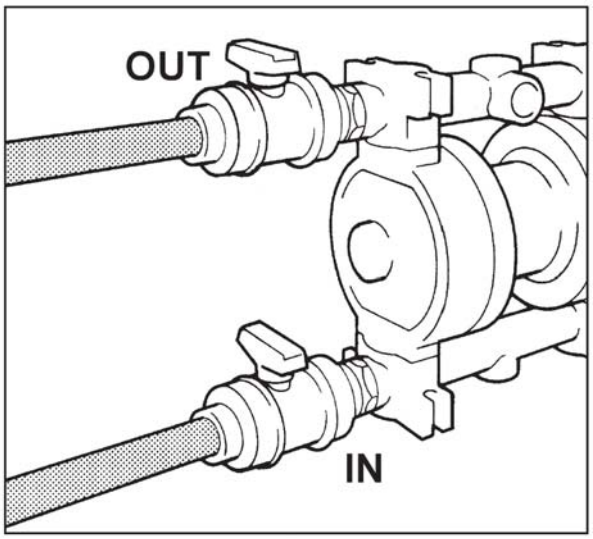
If not protective measure is installed:

RISK OF SEVERE HEALTH AND ENVIRONMENTAL CONSEQUENCES!

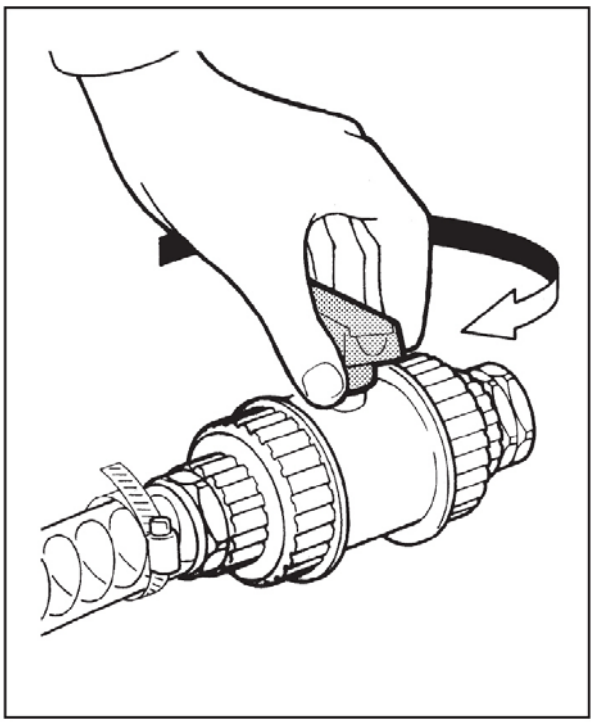
8 Commissioning

Prior to start-up, check whether the suction and pressure lines have been properly installed.

Suction side = Inlet
Pressure side = Output

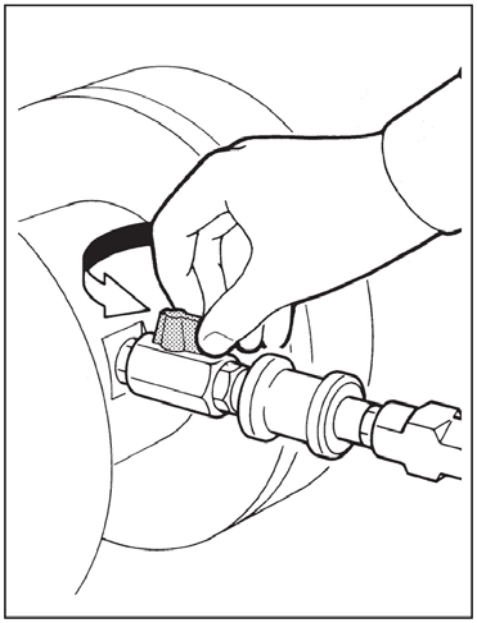


Open the shut-off fittings on the pump (suction and pressure connection).



Verify correct installation of the control lines (shut-off fitting, check valve).

Open the shut-off fitting on the compressed air connection.

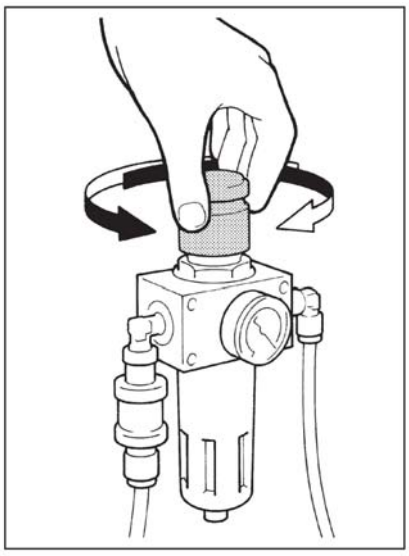


Check and set the air pressure at the filter pressure controller while the pump is running:

min. 2 bar
max. 7 bar

8.1 Controlling the air driven diaphragm pump

The stroke number and thereby the pump capacity can be set using the pressure regulator for the control air.
Be sure that the pressure is not restricted to less than 2 bar.



Regulating using the filter pressure controller also reduces the control air requirement.

The air driven diaphragm pump should be stopped only by means of the control air supply.

CAUTION !

Never stop a running or pressurised pump by closing the shut-off fittings on the suction connection of the pump. This will damage the pump (diaphragm rupture).

CAUTION !

Feeding liquids having higher viscosity requires that:
...the suction line be properly designed and dimensioned.
...the stroke number of the pump be reduced by restricting the control air volume (at constant pressure).

After two running hours the pump should be properly stopped and secured against accidental restarting. Now check and if necessary correct all fittings for tight sealing.

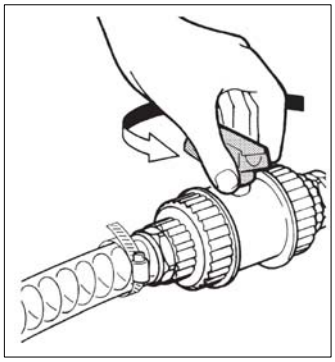
Once all fittings are correctly tightened, the pump is ready for operation (including continuous operation).

9 Maintenance

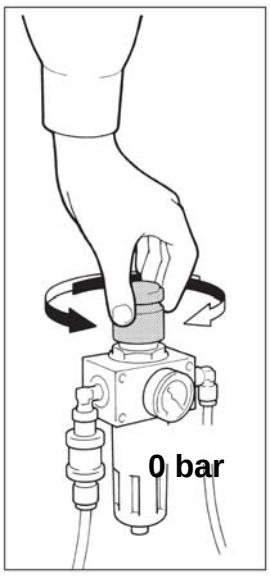
CAUTION !

All maintenance work must be performed only with a de-pressurised system.
This applies to the suction and pressure line as well as to the control air.

Properly stop the pump, let out the medium and close the shut-off fittings.



Bring the pressure of the control air down to near zero and ensure that there is no residual pressure, close the shut-off fitting in the control air line



CAUTION !

Whenever performing work on the system, be sure that you have the necessary wear and/or spare parts available before starting your work.
Handle and store removed parts carefully to prevent damage.

CAUTION !

All wear parts must be checked at regular intervals for optimum condition and replaced as necessary.

CAUTION !

When installing or assembling the pump, it must always be kept level. Otherwise there is a risk that leaks from fasteners and connectors on metal lines will leak.

9.1 Wearing parts

The wear parts must be regularly replaced depending on how and how long they have been used to ensure reliable functioning of the air driven diaphragm pump.

We recommend inspection and replacement of the diaphragms after:

- 20 mil. Strokes when aggressive media are used
- 10 mil. Strokes when abrasive media are used*

or at least once a year.

* Please note that these are only rough guidelines. When strongly abrasive media are used, increased wear of the diaphragms will occur in a much shorter time.

To monitor the number of strokes, we offer an optional stroke counter (see section 13 „Accessories“).

If more severe operating conditions result in premature diaphragm rupture, the air driven diaphragm pump must be properly shut down (see section 8.1) and the diaphragm replaced as described in section 9.4.

Wear parts on the air driven diaphragm pump include:

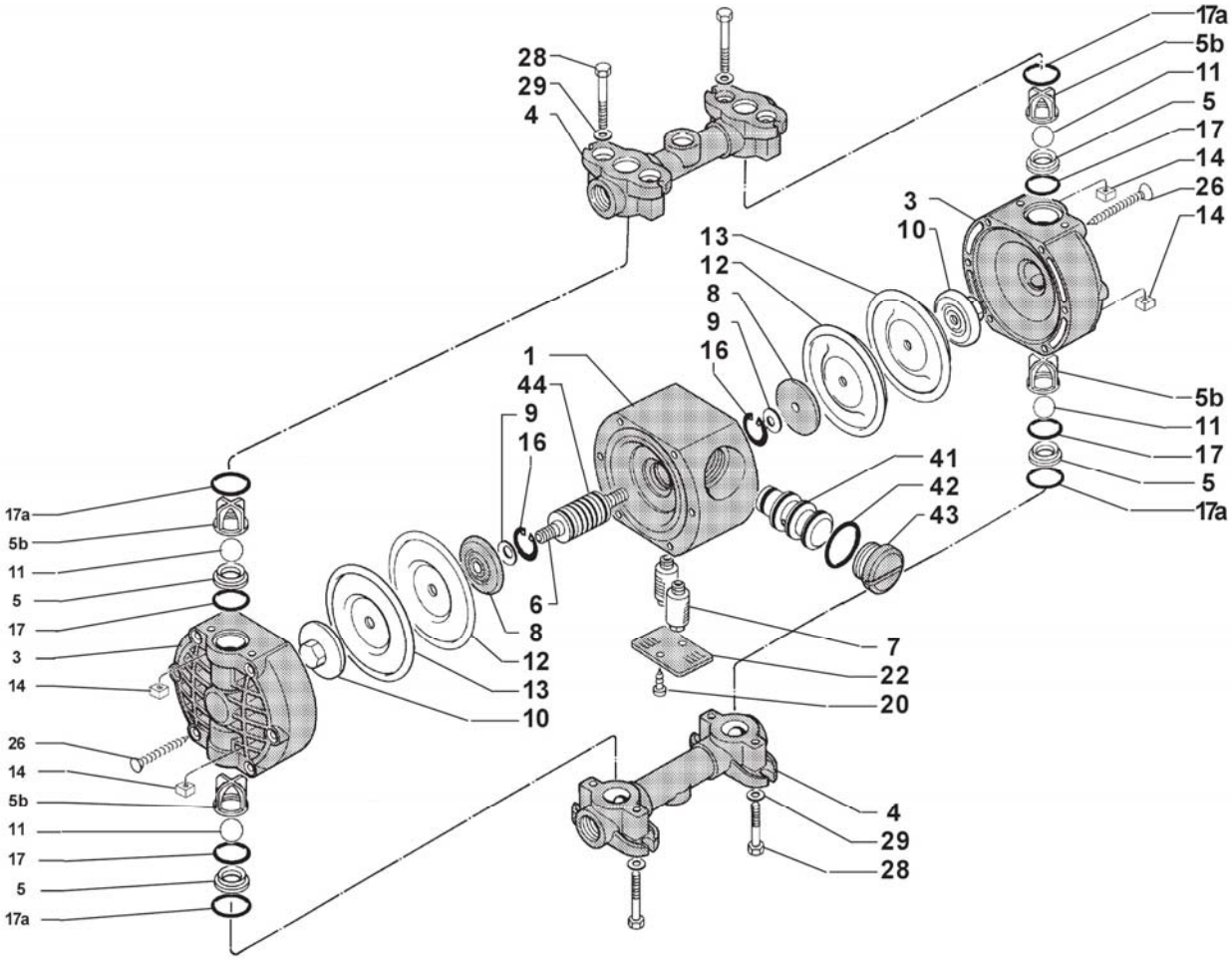
- Diaphragms
- Valve balls
- Valve seats
- Valve seals

9.2 Spare parts

Spare parts for the air driven diaphragm pump include the:

- Control valve

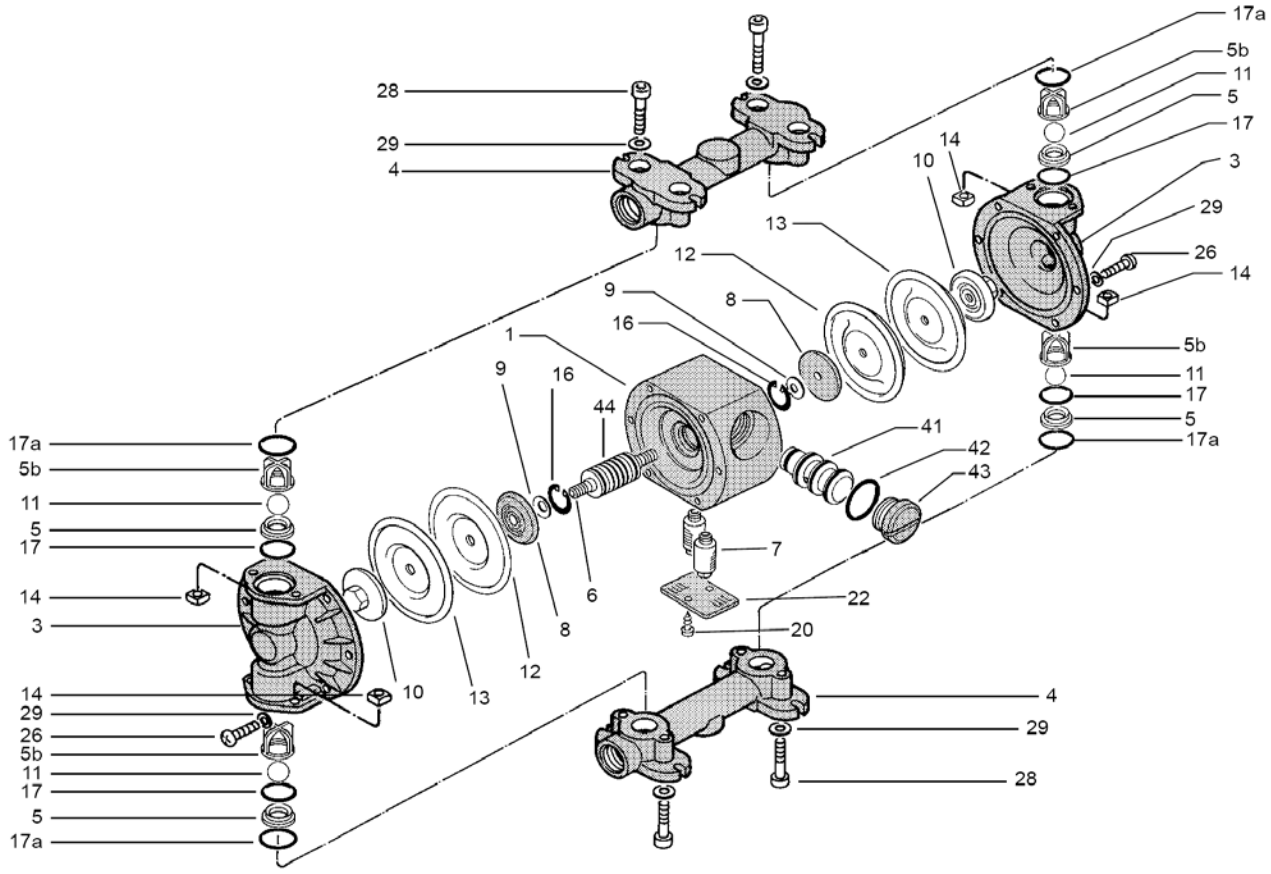
9.2.1 Spare parts / wearing parts AP.. - 30 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	
16	Snap ring	
17	Valve seal	
17a	Valve seal	

Pos.	Designation	Article-No.
18	Blind plug	
20	Screw, air outlet cover	
22	Air outlet cover	
26	Screw, pump body	
28	Screw, common piping	
29	Disc	
41	Shuttle distributor	
42	Cap shuttle gasket	
43	Cap shuttle	
44	Control valve	

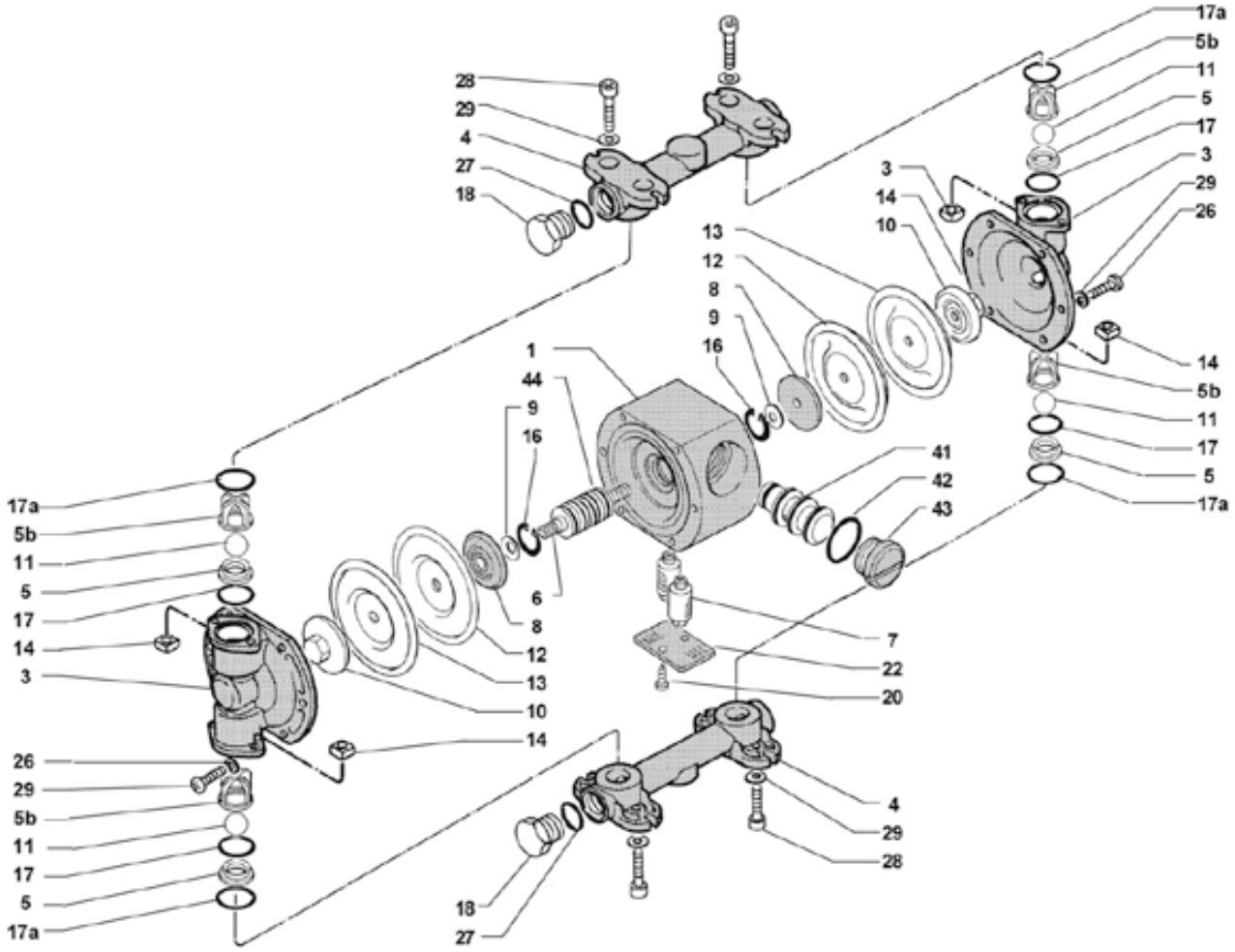
9.2.2 Spare parts / wearing parts AP.. - 30 (aluminium)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	
16	Snap ring	
17	Valve seal	
17a	Valve seal	

Pos.	Designation	Article-No.
20	Screw, air outlet cover	
22	Air outlet cover	
26	Screw, pump body	
28	Screw, common piping	
29	Disc	
41	Shuttle distributor	
42	Cap shuttle gasket	
43	Cap shuttle	
44	Control valve	

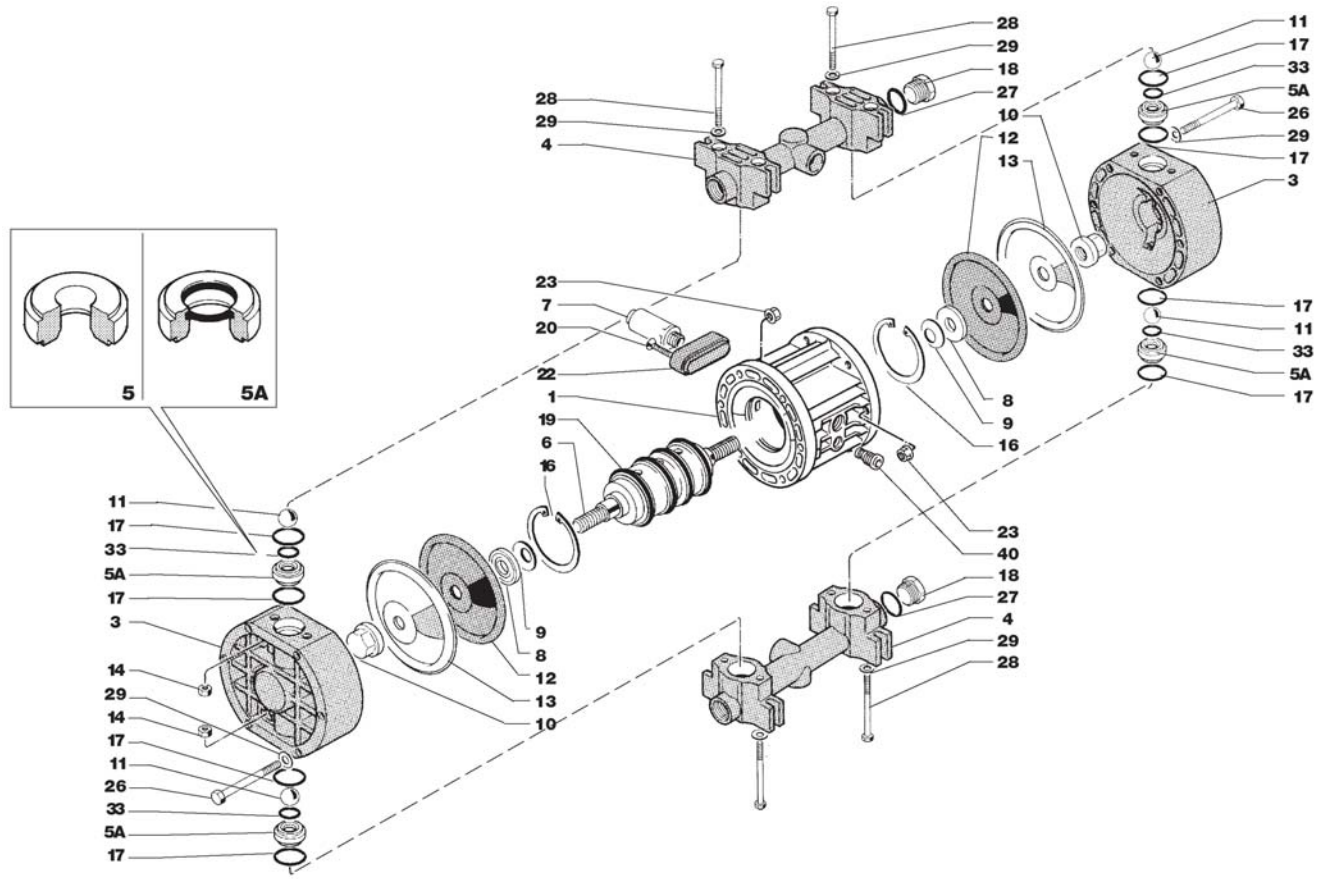
9.2.3 Spare parts / wearing parts AP.. - 30 (AISI 316)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	
16	Snap ring	
17	Valve seal	
17a	Valve seal	

Pos.	Designation	Article-No.
18	Blind plug	
20	Screw, air outlet cover	
22	Air outlet cover	
26	Screw, pump body	
28	Screw, common piping	
29	Disc	
41	Shuttle distributor	
42	Cap shuttle gasket	
43	Cap shuttle	
44	Control valve	

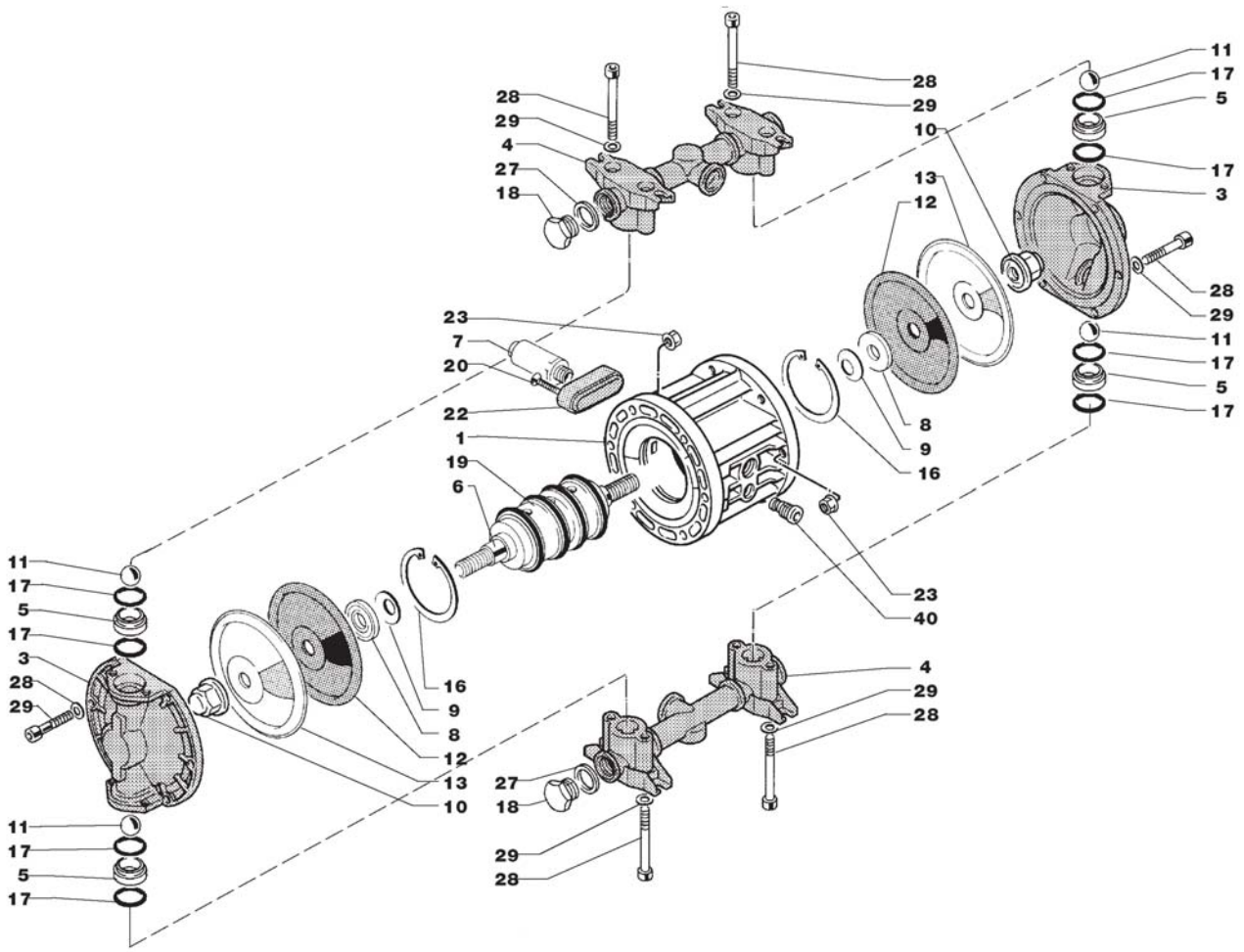
9.2.4 Spare parts / wearing parts AP..- 45 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Control valve T20	
20	Screw, air outlet cover	

Pos.	Designation	Article-No.
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
33	O-ring	
40	Reset valve	

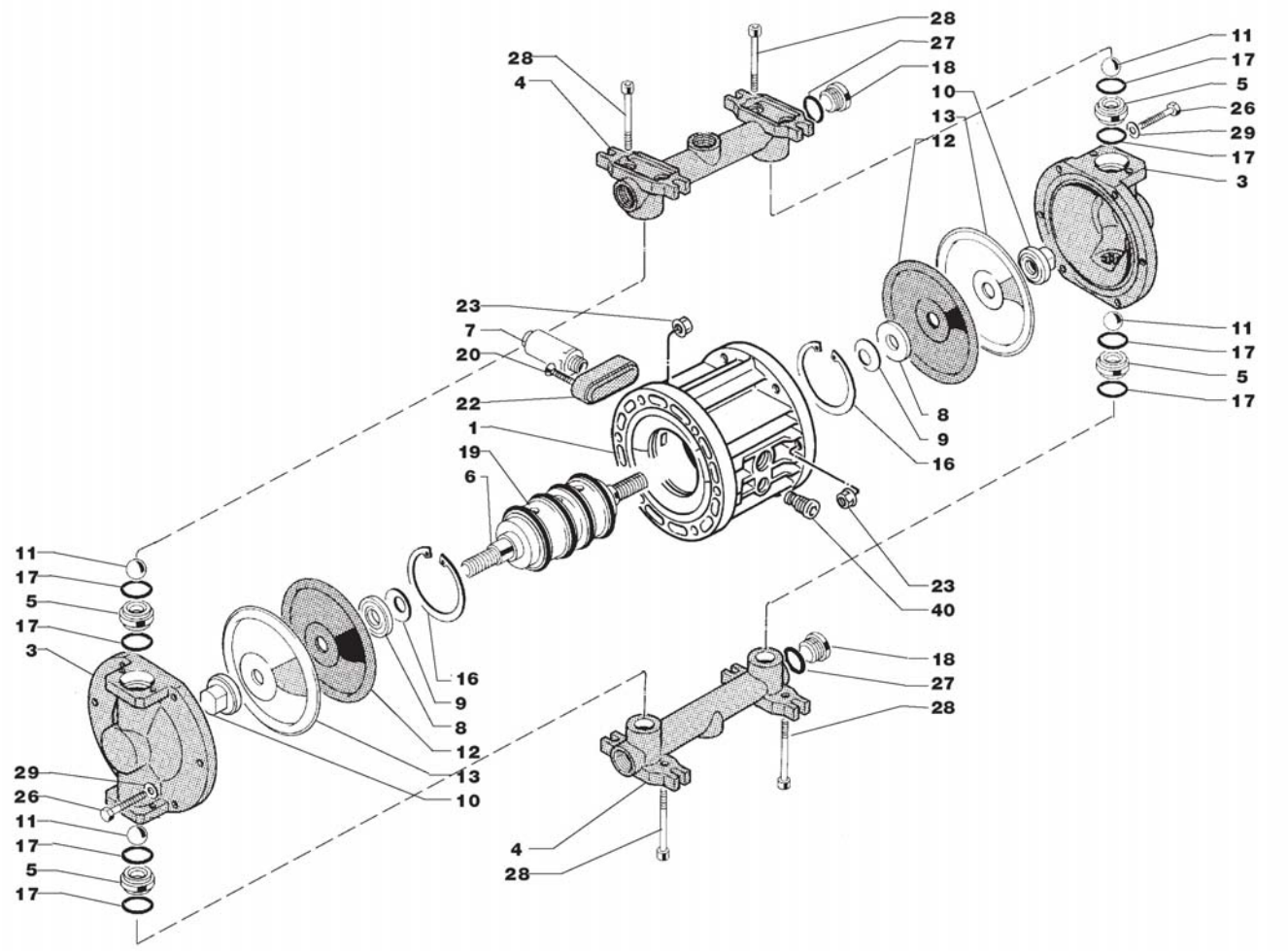
9.2.5 Spare parts / wearing parts AP..- 45 (AISI 316)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Contro valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
40	Reset Valve	

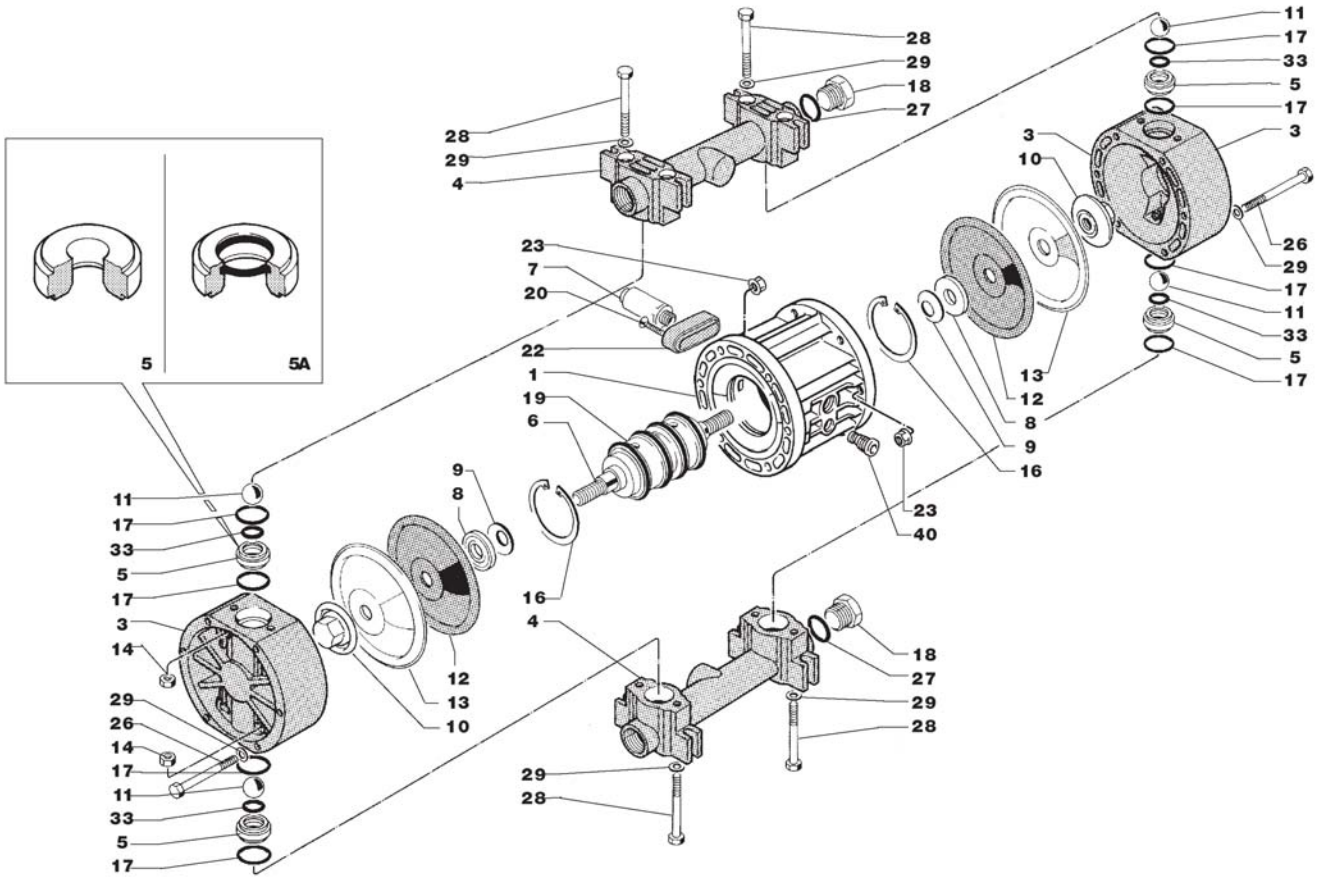
9.2.6 Spare parts / wearing parts AP..- 45 (Aluminium)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Contro valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
40	Reset Valve	

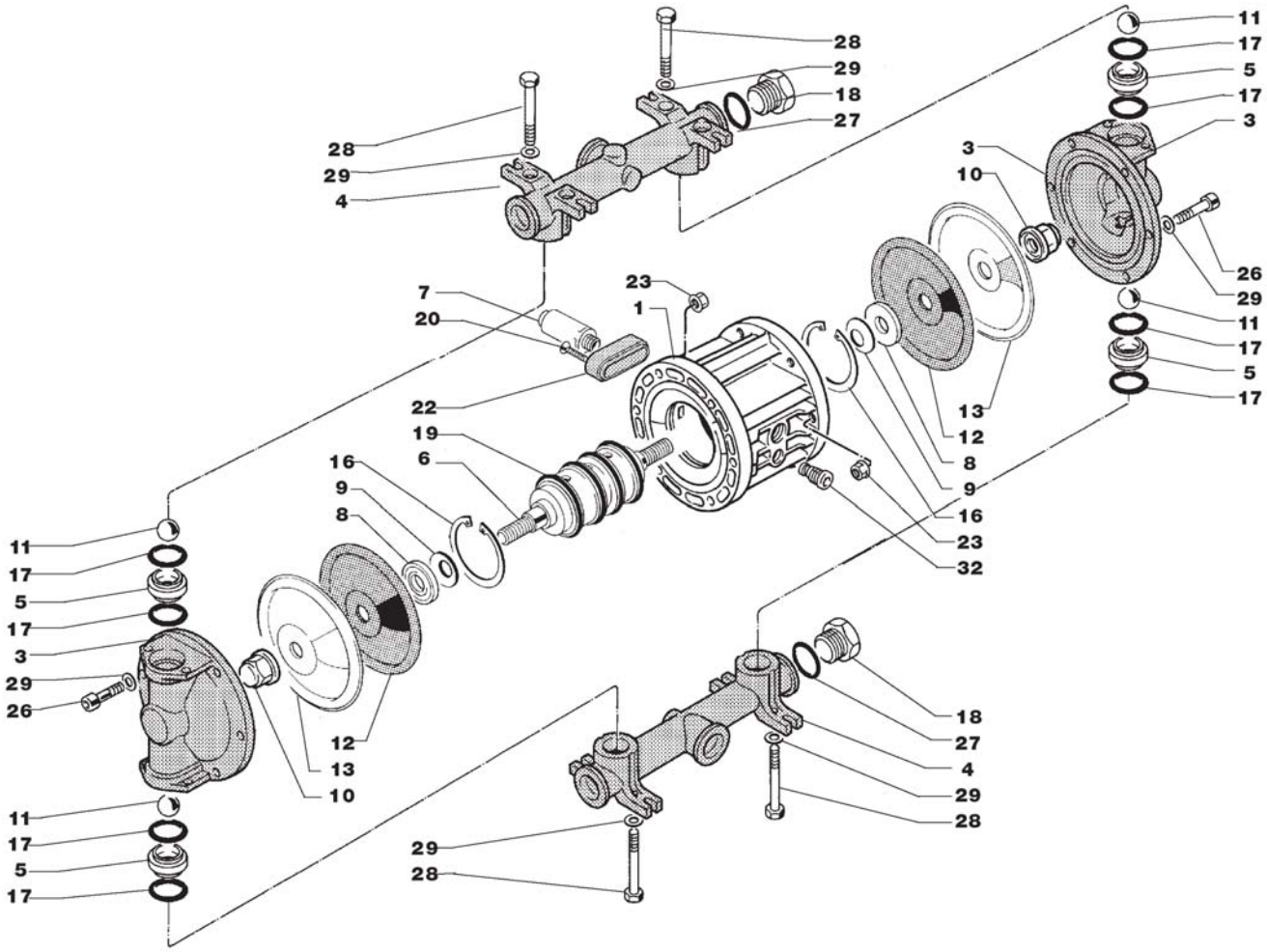
9.2.7 Spare parts / wearing parts AP..- 90 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Contro valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
33	O-ring	
40	Reset Valve	

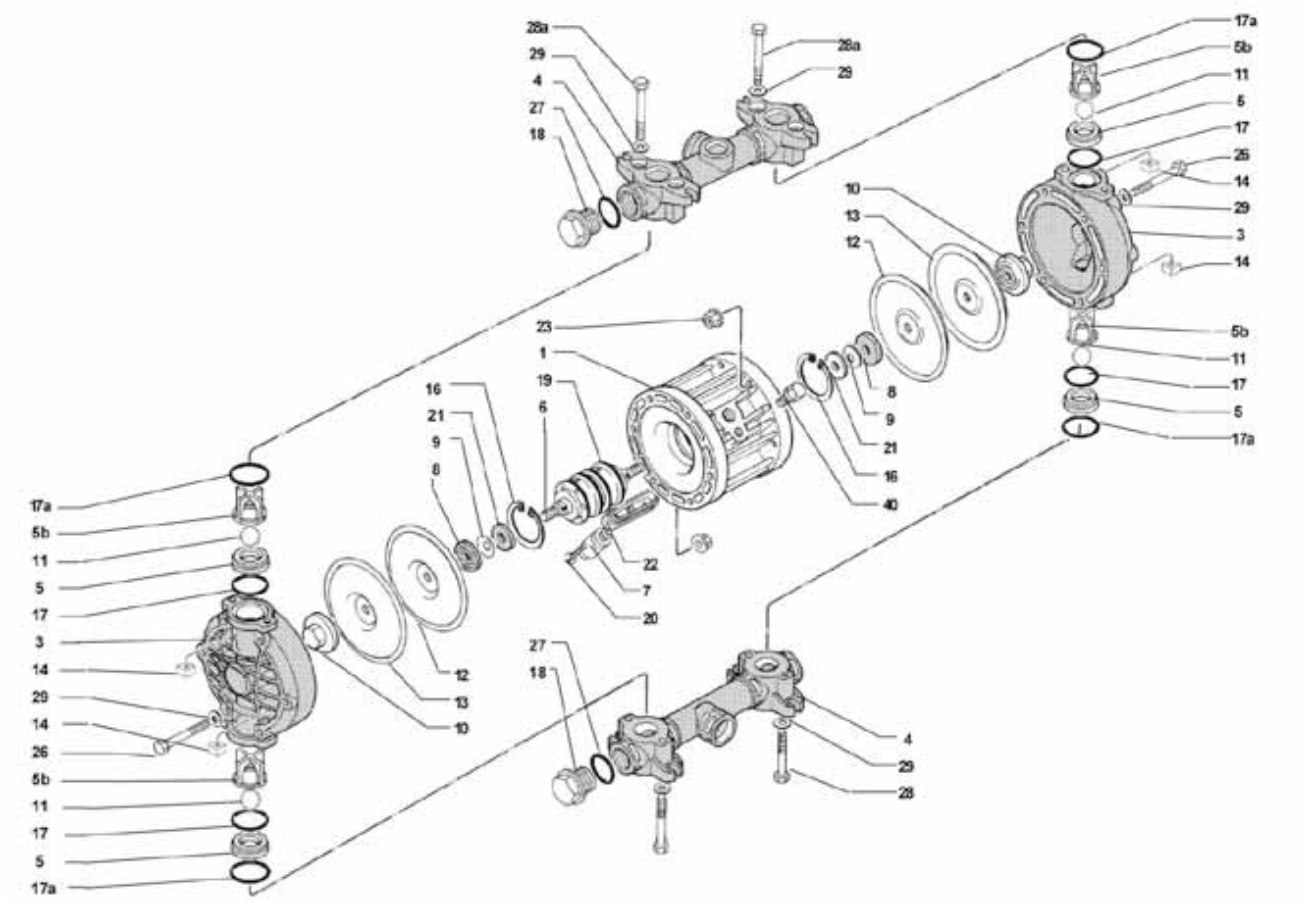
9.2.8 Spare parts / wearing parts AP..- 90 (AISI 316)



Pos.	Designation	Artikel-Nr.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	

Pos.	Designation	Artikel-Nr.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Contro valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
33	O-ring	
40	Reset valve	

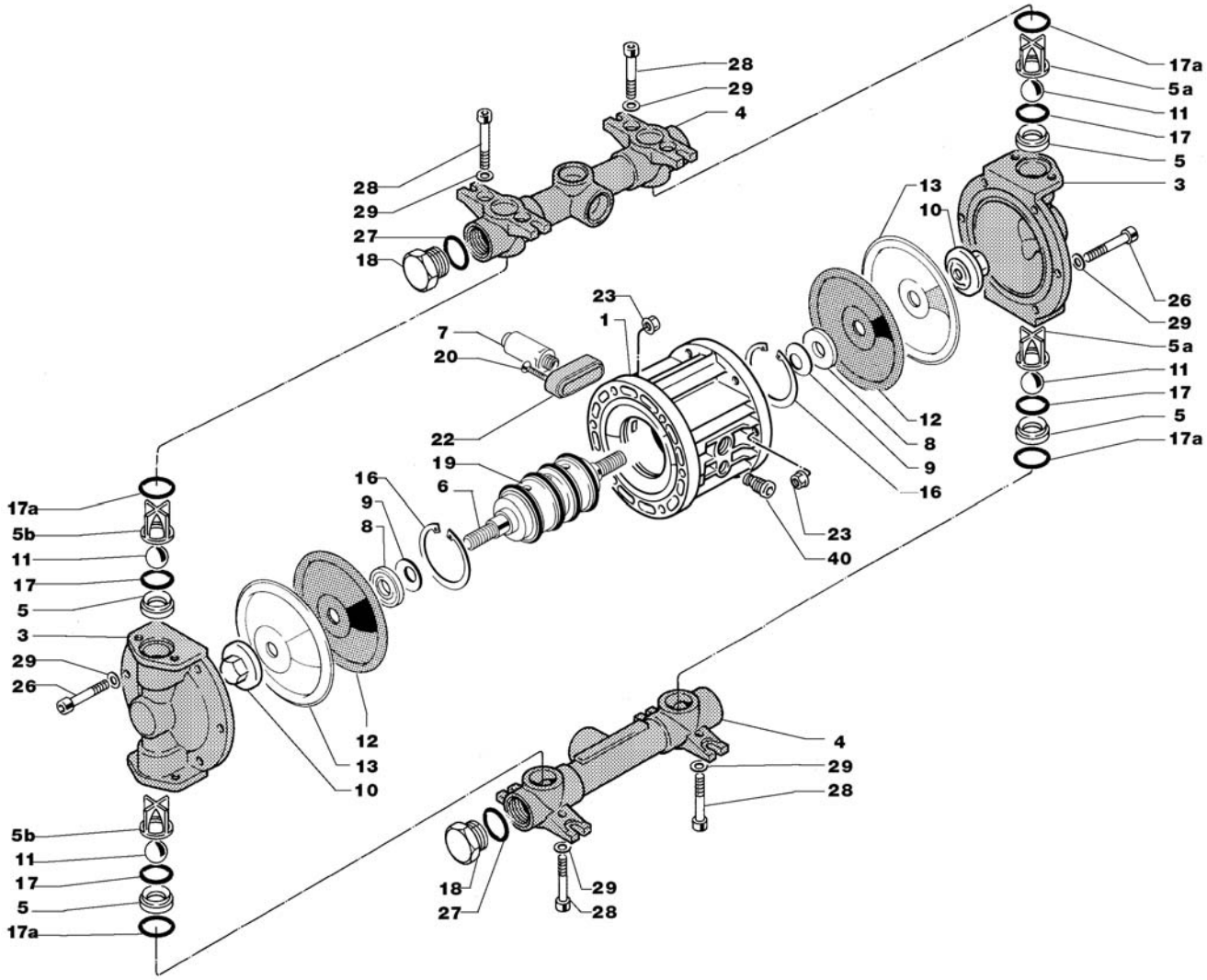
9.2.9 Spare parts / wearing parts AP..- 100 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Square nut	

Pos.	Designation	Article-No.
16	Snap ring	
17	lower valve seal	
17a	upper valve seal	
18	Blind plug	
19	Control valve T20	
20	Screw, air outlet cover	
21	Spacer	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
19	Disk	
32	Reset valve	

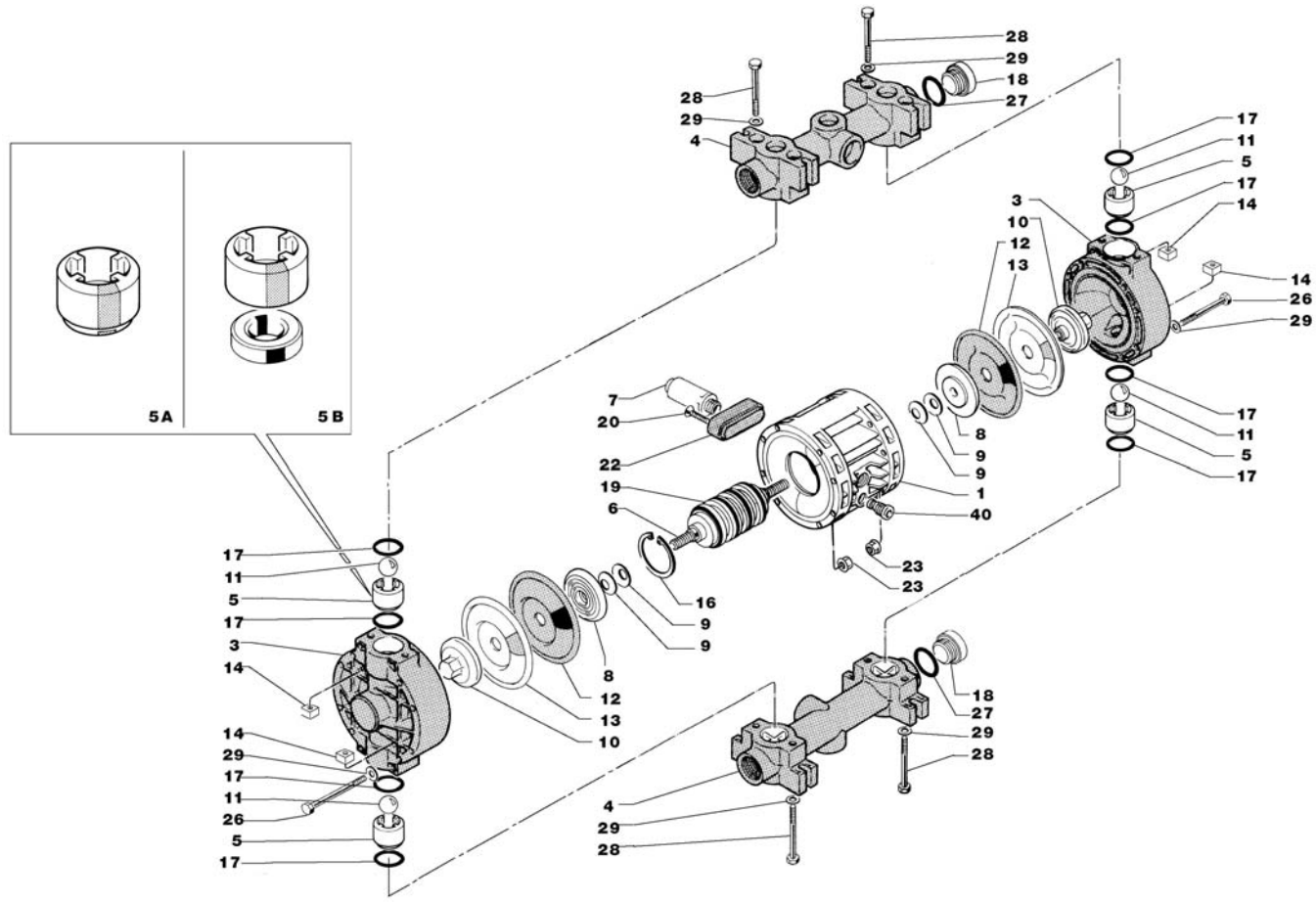
9.2.10 Spare parts / wearing parts AP..- 100 (Aluminium)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
14	Square nut	
16	Snap ring	
17	Valve seat	
18	Blind plug	
19	Control valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
40	Reset Valve	

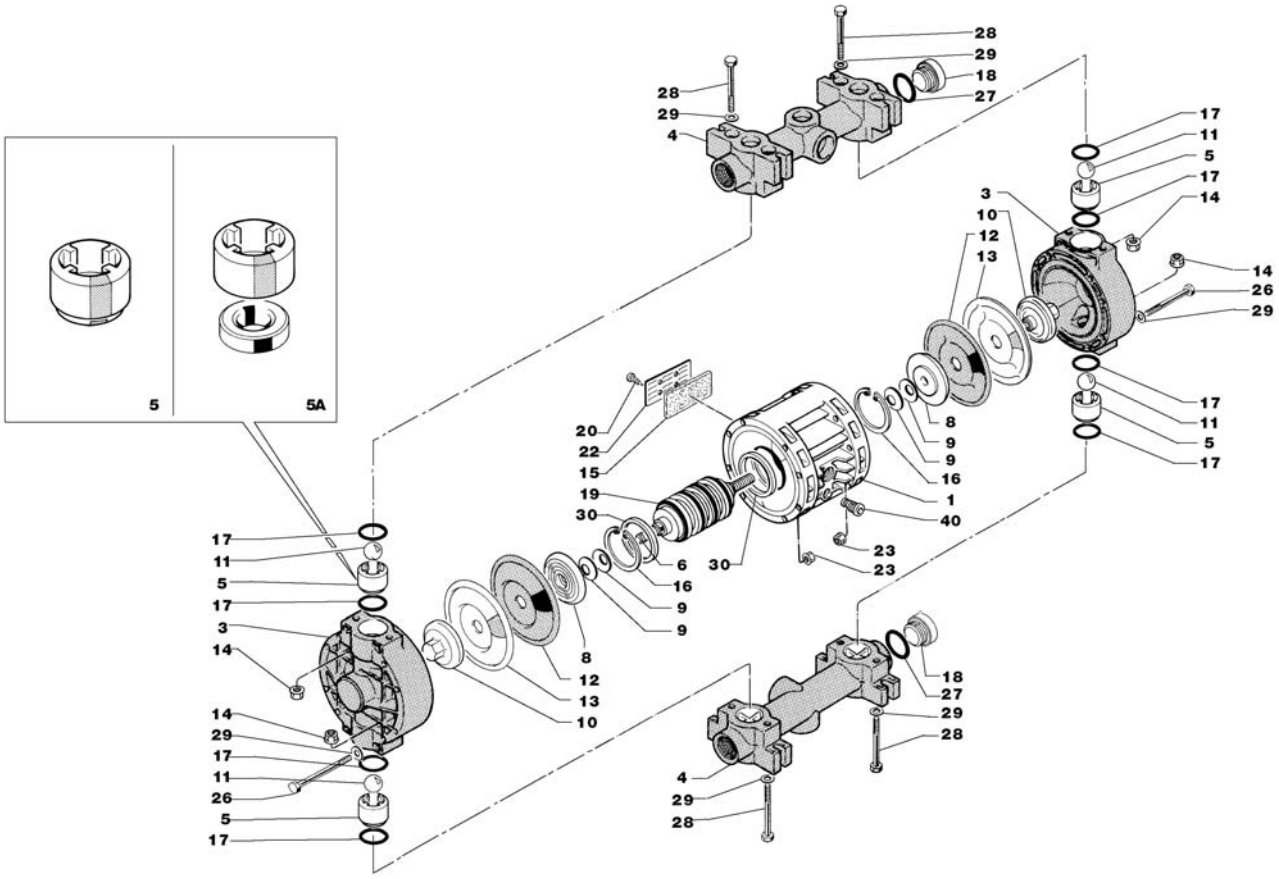
9.2.11 Spare parts / wearing parts AP..- 150 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Sound absorber	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Contro valve T20	
20	Screw, air outlet cover	
22	Air outlet cover	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
40	Reset valve	

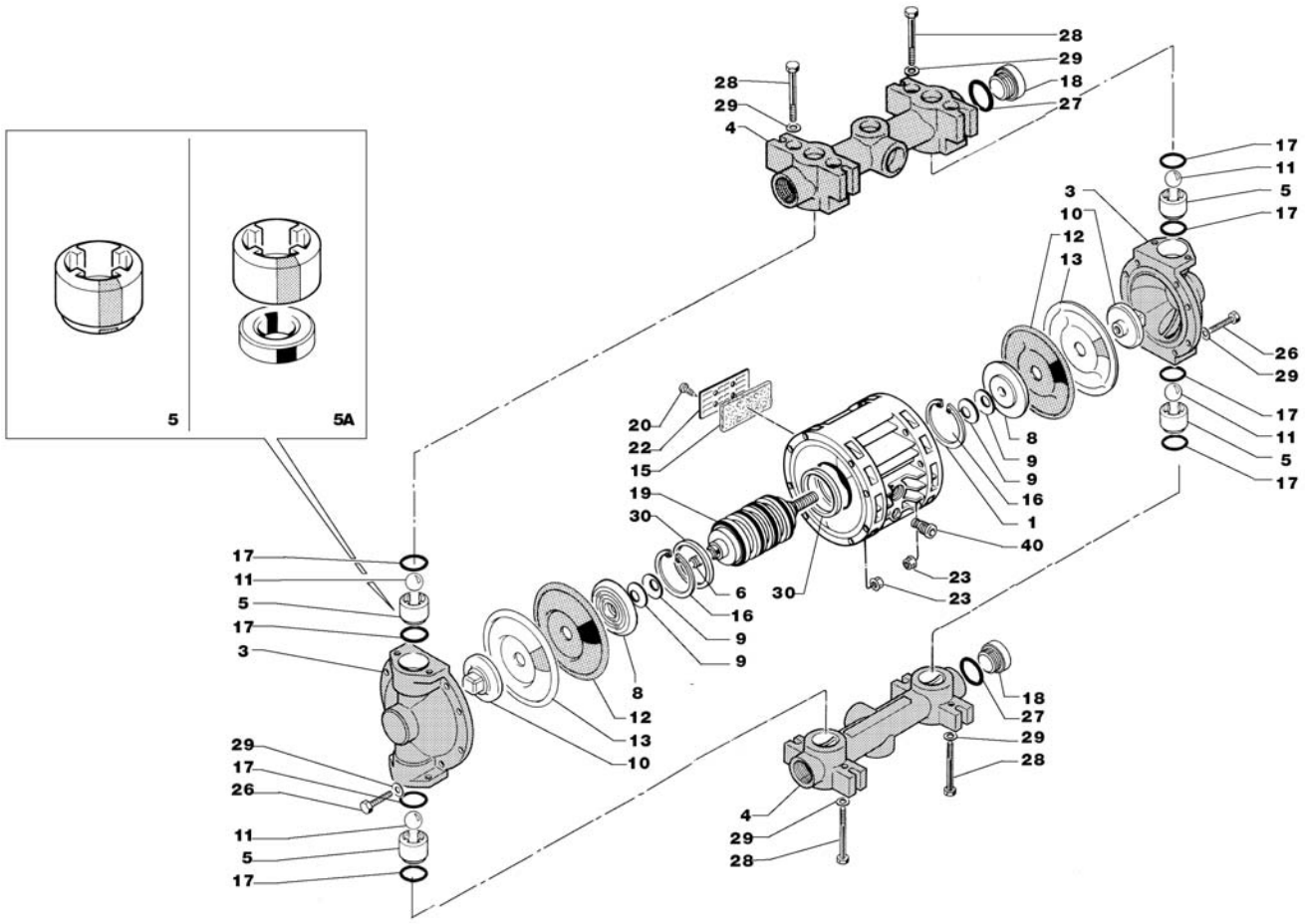
9.2.12 Spare parts / wearing parts AP..- 200.1 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Nut	
15	Sound absorber filter	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Control valve T30	
20	Screw, sound absorber grid	
22	Sound absorber grid	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
30	Distance ring	
40	Reset valve	

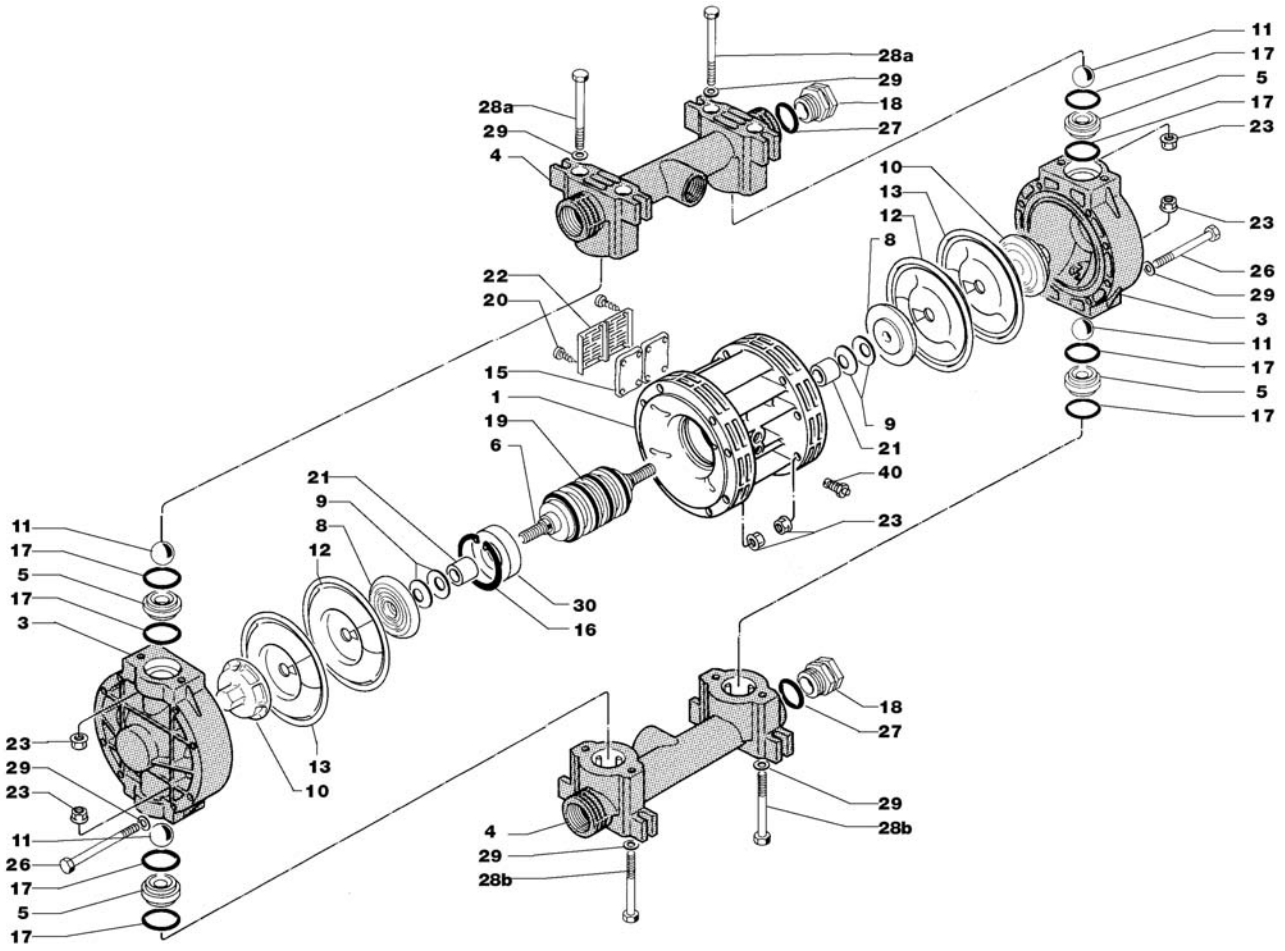
9.2.13 Spare parts / wearing parts AP..- 200.1 (Aluminium)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
14	Nut	
15	Sound absorber filter	

Pos.	Designation	Article-No.
16	Snap ring	
17	Valve seal	
18	Blind plug	
19	Control valve T30	
20	Screw, sound absorber grid	
22	Sound absorber grid	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28	Screw, common piping	
30	Distance ring	
40	Reset valve	

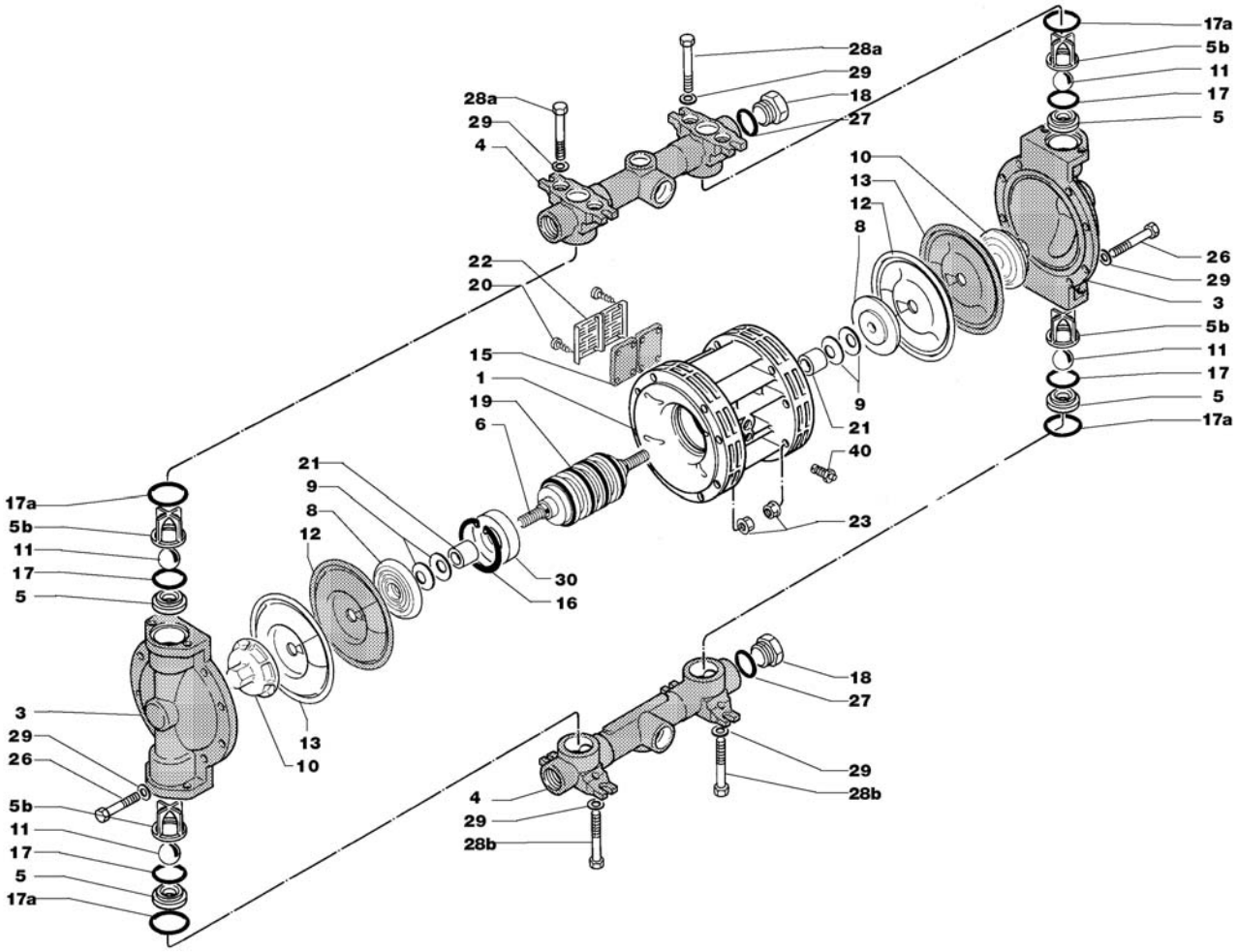
9.2.14 Spare parts / wearing parts AP..- 340 (plastic)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
6	Connection rod	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
15	Sound absorber filter	
16	Snap ring	
17	Valve seal	

Pos.	Designation	Article-No.
18	Blind plug	
19	Control valve T30	
20	Screw, sound absorber grid	
21	Distance sleeve	
22	Sound absorber grid	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28a	Screw, common piping	
28b	Scew, common piping	
29	Disc	
30	Distance ring	
40	Reset valve	

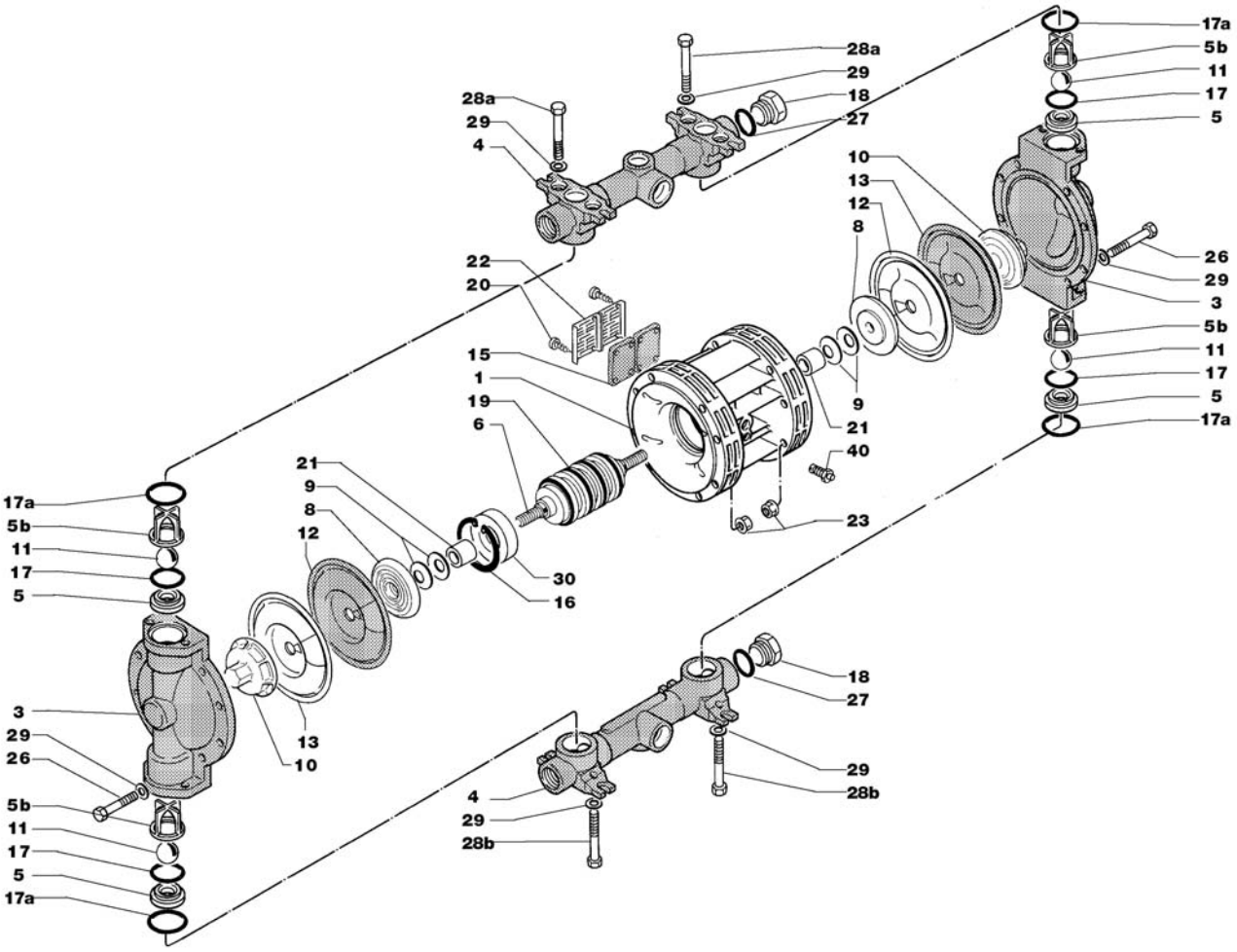
9.2.15 Spare parts / wearing parts AP..- 340 (Aluminium)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
15	Sound absorber filter	
16	Snap ring	

Pos.	Designation	Article-No.
17	Valve seal, internal	
17a	Valve seal, external	
18	Blind plug	
19	Control valve T30	
20	Screw, sound absorber grid	
22	Sound absorber grid	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28a	Screw, common piping	
28b	Screw, common piping	
29	Disc	
30	Distance ring	
40	Reset valve	

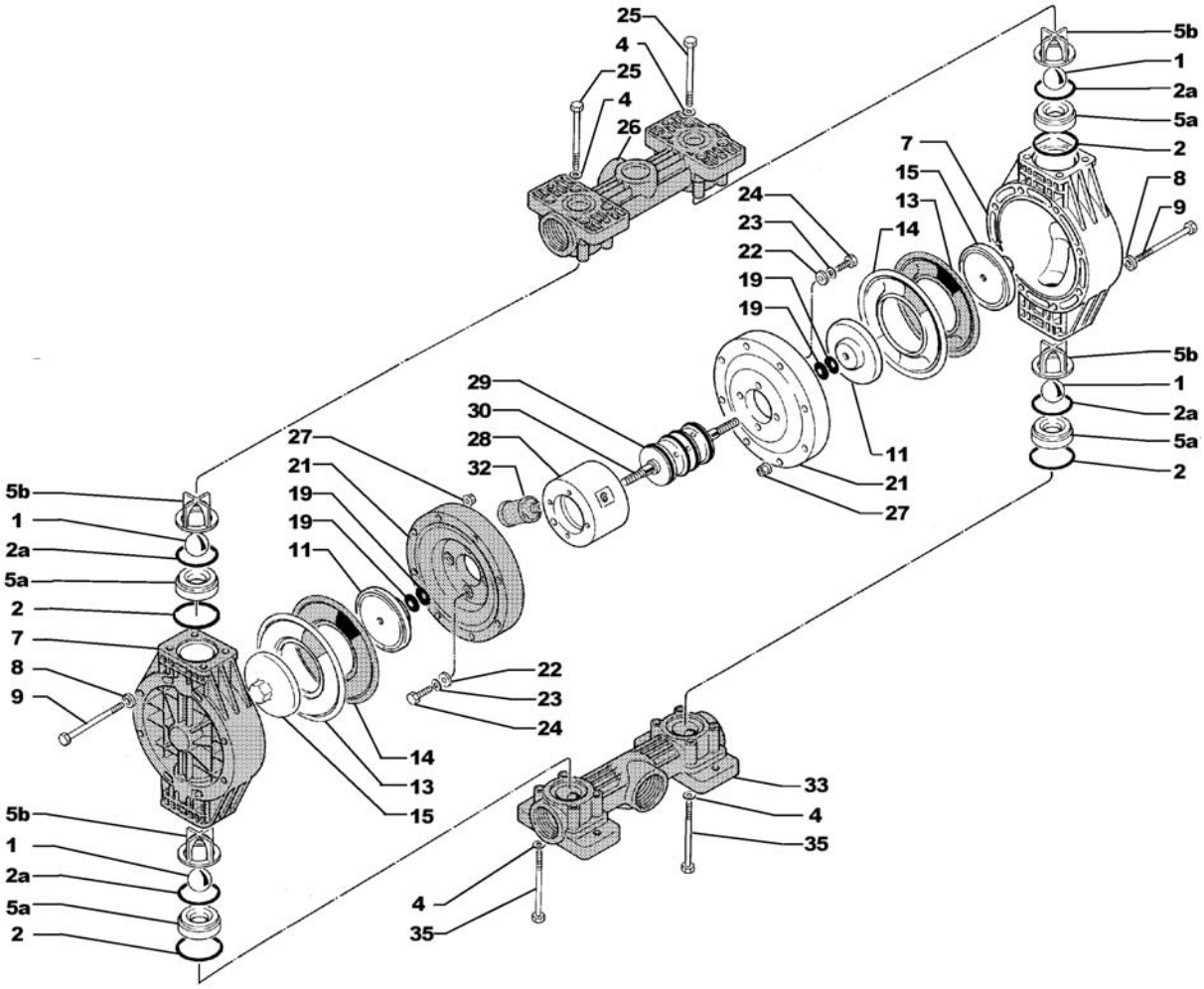
9.2.16 Spare parts / wearing parts AP..- 340 (AISI 316)



Pos.	Designation	Article-No.
1	Motor housing	
3	Pump body	
4	Common piping	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Valve ball	
12	Diaphragm, internal	
13	Diaphragm, external	
15	Sound absorber filter	
16	Snap ring	

Pos.	Designation	Article-No.
17	Valve seal, internal	
17a	Valve seal, external	
18	Blind plug	
19	Control valve T30	
20	Screw, sound absorber grid	
22	Sound absorber grid	
23	Nut	
26	Screw, pump body	
27	Seal, blind plug	
28a	Screw, common piping	
28b	Screw, common piping	
29	Disc	
30	Distance ring	
40	Reset valve	

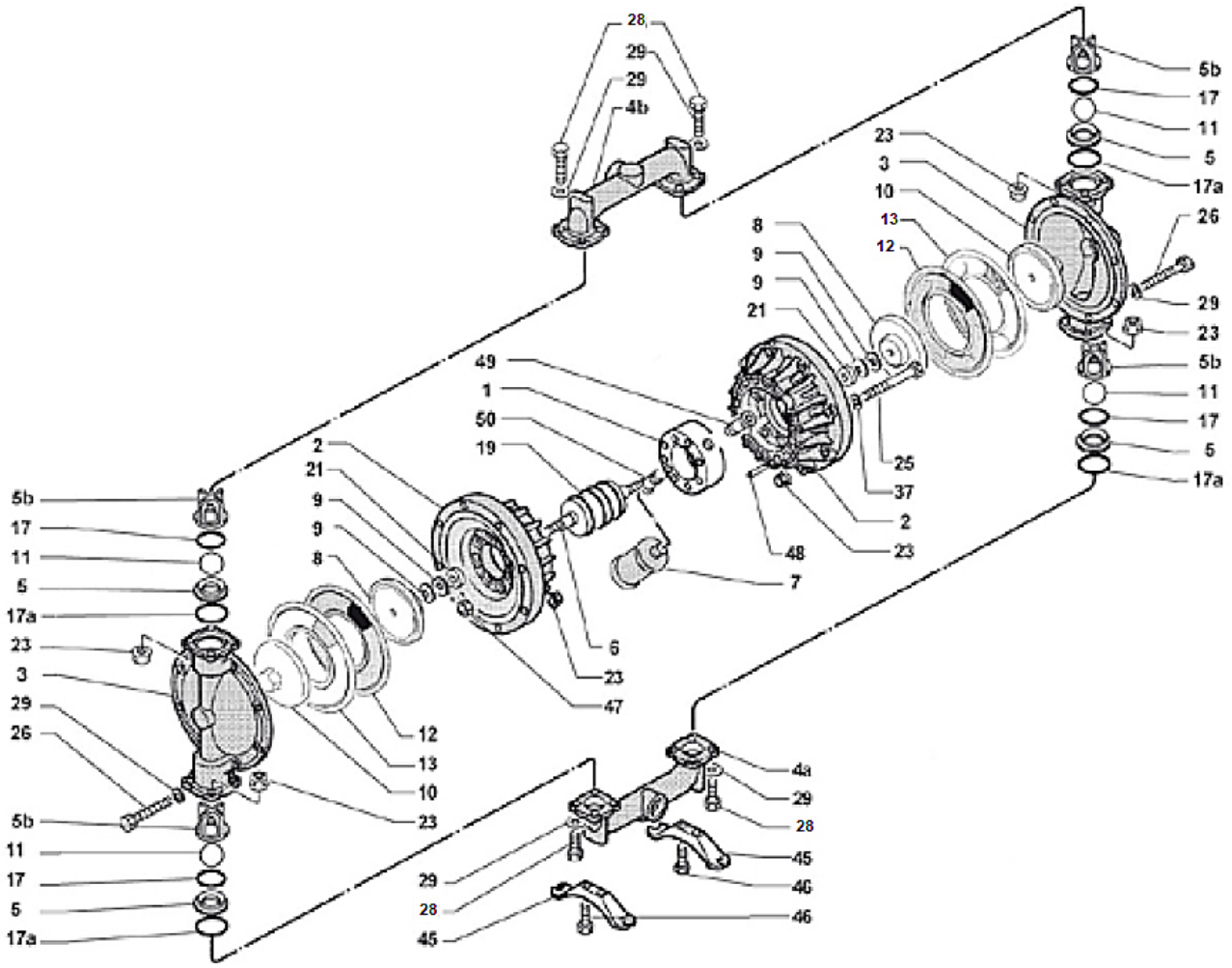
9.2.17 Spare parts / wearing parts AP.. - 650 (plastic)



Pos.	Designation	Article-No.
1	Ball seat	
2	Ball seat O-ring, below	
2a	Ball seat O-ring, above	
4	Disc	
5a	Ball seat	
5b	Ball guide	
6	Nut	
7	Pump body	
8	Disc	
9	Screw, pump body	
11	Pressure plate	
13	Diaphragm, external	
14	Diaphragm, internal	
15	Diaphragm fixing	

Pos.	Designation	Article-No.
19	Spring washer	
21	Flange	
22	Spring washer	
23	Disc	
24	Screw	
25	Screw, common pipe, press.side	
26	Common piping, pressure side	
27	Nut	
28	Motor housing	
29	Control valve T40	
30	Connection rod	
32	Sound absorber	
33	Common piping, suction side	
35	Screw, common pipe, suction side	

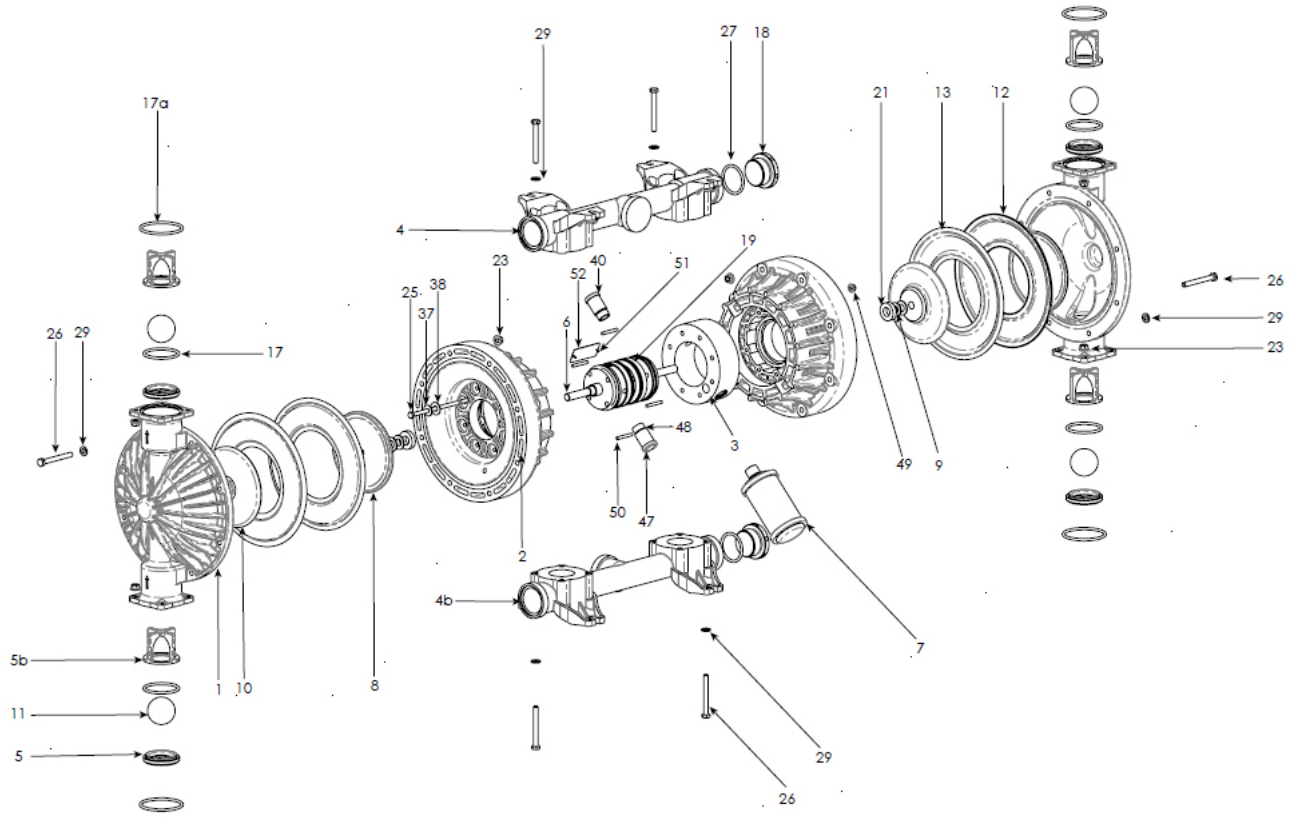
9.2.18 Spare parts / wearing parts AP.. - 650 (AISI 316)



Pos.	Designation	Article-No.
1	Main block	
2	Flange	
3	Pump body	
4a	Common piping (suction line)	
4b	Common piping (pressure line)	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Silencer	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
17	Valve seal, external	
17a	Valve seal, internal	
19	Control valve	
21	Distance sleeve	
23	Nut	
25	Screw	
26	Screw, pump body	
28	Screw, common pipe, suct. side	
29	Joint, common pipe, suct. side.	
37	Disc	
46	Screw	
47	Nut	
48	Pin	
49	Silencer extension	
50	Air connec. extension	

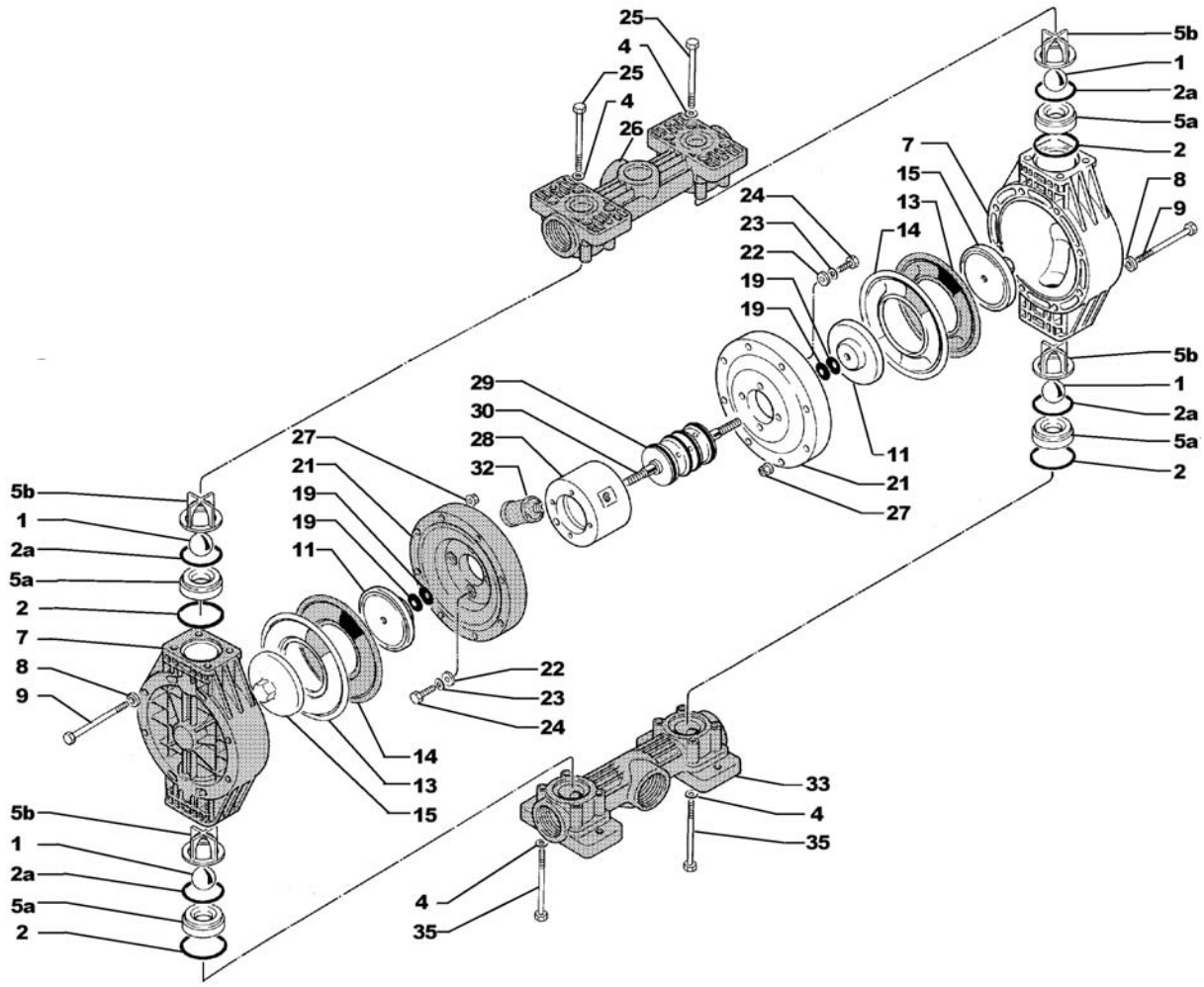
9.2.19 Spare parts / wearing parts AP.. - 650 (Aluminium)



Pos.	Designation	Article-No.
1	Main block	
2	Flange	
3	Pump body	
4	Common piping (suction line)	
5	Ball seat	
5b	Ball guide	
6	Connection rod	
7	Silencer	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
17	Valve seal, internal	
17a	Valve seal, external	
19	Control valve	
21	Distance sleeve	
23	Nut	
25	Screw	
26	Screw, pump body	
28	Screw, common pipe, suct. side	
29	Joint, common pipe, suct. side.	
37	Disc	
38	Spring washer	
40	Silencer extension	
47	Air connec. extension	
49	Nut	
50	Pin	
51	Screw	
52	Adapter-Label	

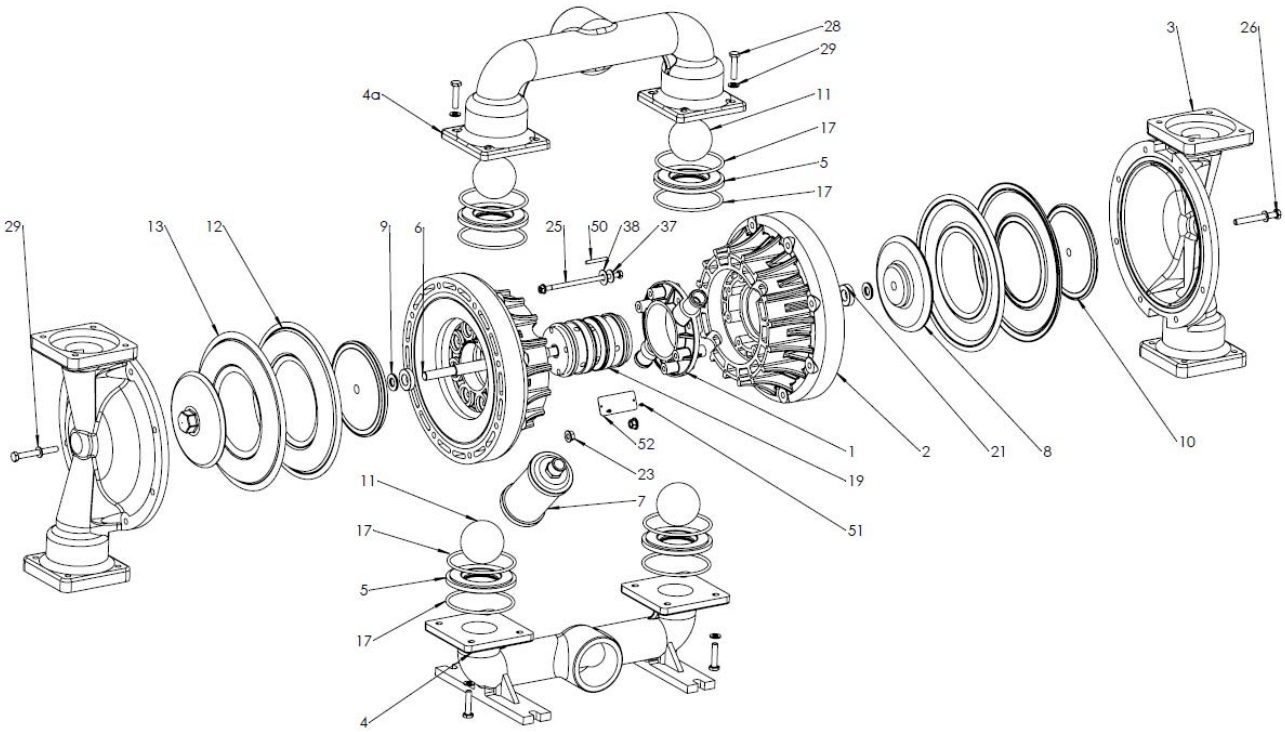
9.2.20 Spare parts / wearing parts AP.. - 850 (plastic)



Pos.	Designation	Article-No.
1	Ball seat	
2	Valve seal, external	
2a	Valve seal, internal	
4	Disc	
5a	Ball seat	
5b	Ball guide	
6	Nut	
7	Pump body	
8	Disc	
9	Screw, pump body	
11	Pressure plate	
13	Diaphragm, external	
14	Diaphragm, internal	
15	Diaphragm fixing	

Pos.	Designation	Article-No.
19	Spring washer	
21	Flange	
22	Spring washer	
23	Disc	
24	Screw	
25	Screw, common pipe, press.side	
26	Common piping, pressure side	
27	Nut	
28	Motor housing	
29	Control valve T40	
30	Connection rod	
32	Sound absorber	
33	Common piping, suction side	
35	Screw, common pipe, suction side	

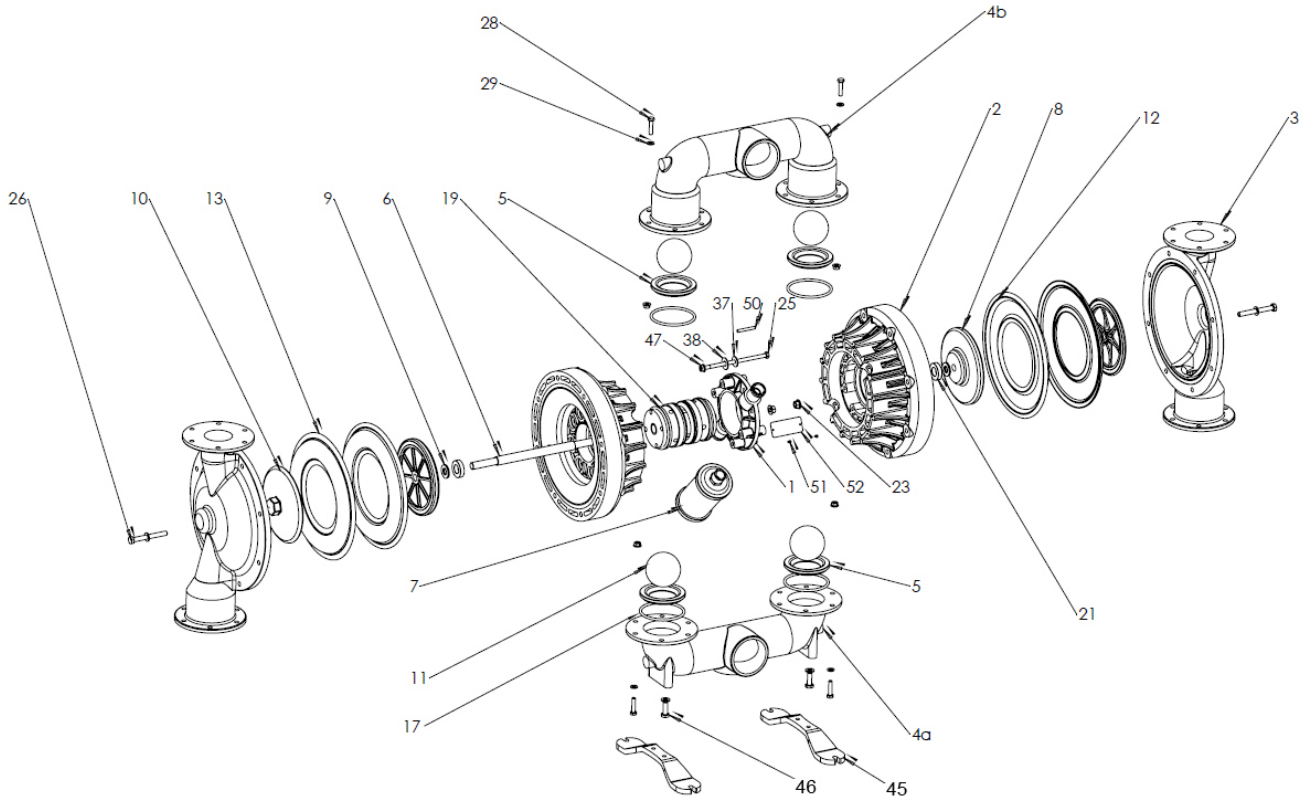
9.2.21 Spare parts / wearing parts AP.. - 850 (Aluminium)



Pos.	Designation	Article-No.
1	Main block	
2	Flange	
3	Pump body	
4	Common piping (suction line)	
5	Ball seat	
6	Connection rod	
7	Silencer	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
17	Valve seal	
19	Control valve	
21	Distance sleeve	
23	Nut	
25	Screw	
26	Screw, pump body	
28	Screw, common pipe, suct. side	
29	Joint, common pipe, suct. side.	
37	Disc	
38	Spring washer	
50	Pin	
51	Screw	
52	Adapter-Label	

9.2.22 Spare parts / wearing parts AP.. - 850 (AISI 316)



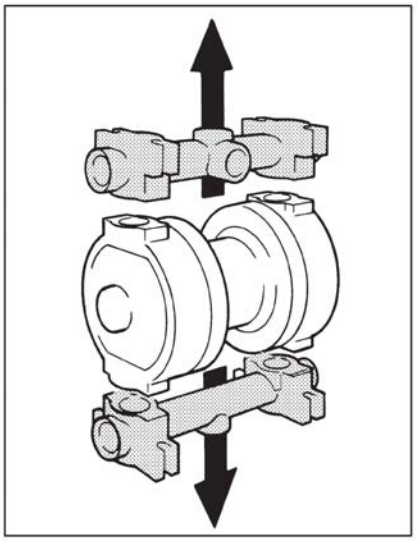
Pos.	Designation	Article-No.
1	Main block	
2	Flange	
3	Pump body	
4a	Common piping (suction line)	
4b	Common piping (pressure line)	
5	Ball seat	
6	Connection rod	
7	Silencer	
8	Pressure plate	
9	Spring washer	
10	Diaphragm fixing	
11	Ball	
12	Diaphragm, internal	
13	Diaphragm, external	

Pos.	Designation	Article-No.
17	Ball seat O-ring	
19	Control valve	
21	Distance sleeve	
23	Nut	
25	Screw	
26	Screw, pump body	
28	Screw, common pipe, suct. side	
29	Joint, common pipe, suct. side.	
37	Disc	
45	Foot	
46	Screw	
47	Nut	
50	Pin	
51	Screw	
52	Adapter-Label	

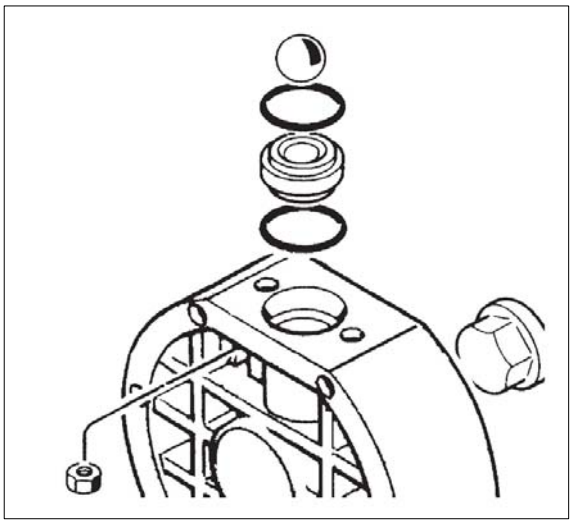
9.3 Maintenance of valves

Procedure for cleaning the valves and/or replacing valve balls and valve seats:

Properly shut down the air driven diaphragm pump.
Ensure that the pump and its connection lines are pressureless, and release the pressure if needed.
Observing the corresponding safety and protection measures, disassemble the suction and pressure connections on the pump.



Remove and clean the valve balls and valve seats.
Inspect balls and seats for their condition and if necessary replace them with exact replacement parts (see exploded diagrams in sections 9.2.1 to 9.2.12)



CAUTION !

Ensure that there are no deposits inside the pump, and clean these out if necessary.

Check the condition of the seals and – if necessary – replace them with exact replacement parts.

After cleaning/replacing the valves/seals, reinstall the pump in reverse order.
The connections are made as described in the preceding sections.

The air driven diaphragm pump is now ready to use again.

9.4 Exchange of diaphragms

CAUTION !

All work to be performed only on a pressureless system !

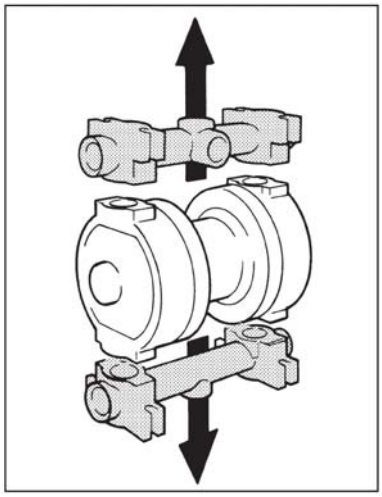
For flawless function of the air driven diaphragm pump and to maintain the required safety and protection characteristics – especially in explosion hazard areas – the drive diaphragms must be regularly inspected and replaced.

For maintenance intervals pertaining to the diaphragms, see section 9.1 „Wear parts“.

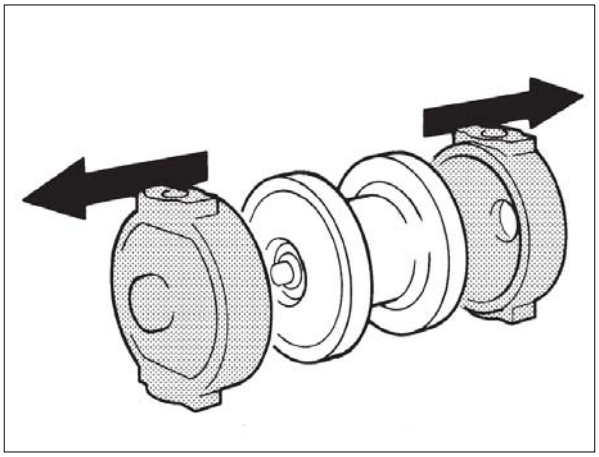
Procedure for changing diaphragms:

Properly shut down the air driven diaphragm pump.
Ensure that the pump and its connection lines are pressureless, and release the pressure if needed.
Disassemble the suction and pressure connections from the pump while observing the corresponding safety and protection measures.

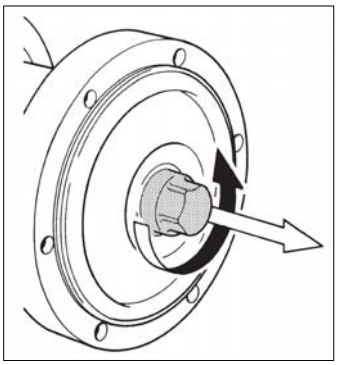
Disassemble the suction and pressure channel of the pump.



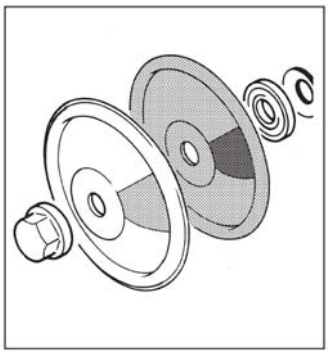
Loosen the mounting screws and remove both pump housings.



Loosen and remove the diaphragm fasteners.



Remove the diaphragms and check their condition. After the prescribed interval has elapsed (see section 9.1) or when there is evidence of wear, the diaphragms must be replaced. We recommend that both diaphragm packages be replaced at the same time.



CAUTION !

Ensure that there are no deposits inside the pump, and clean these out if necessary.

CAUTION !

The parts comprising the control valve, including the shaft, are not resistant to chemical attack. If the control valve has come into contact with the medium following a diaphragm break, the control valve must be replaced as described in section 9.5.

Reassemble the air driven diaphragm pump in reverse order.

Observe tightening torques for attaching the diaphragm!
(see section 9.4.1 „Diaphragm tightening torques“)

Tighten the mounting screws evenly. Connect the suction and pressure lines. Connect the compressed air supply.

The air driven diaphragm pump is now ready to use again.

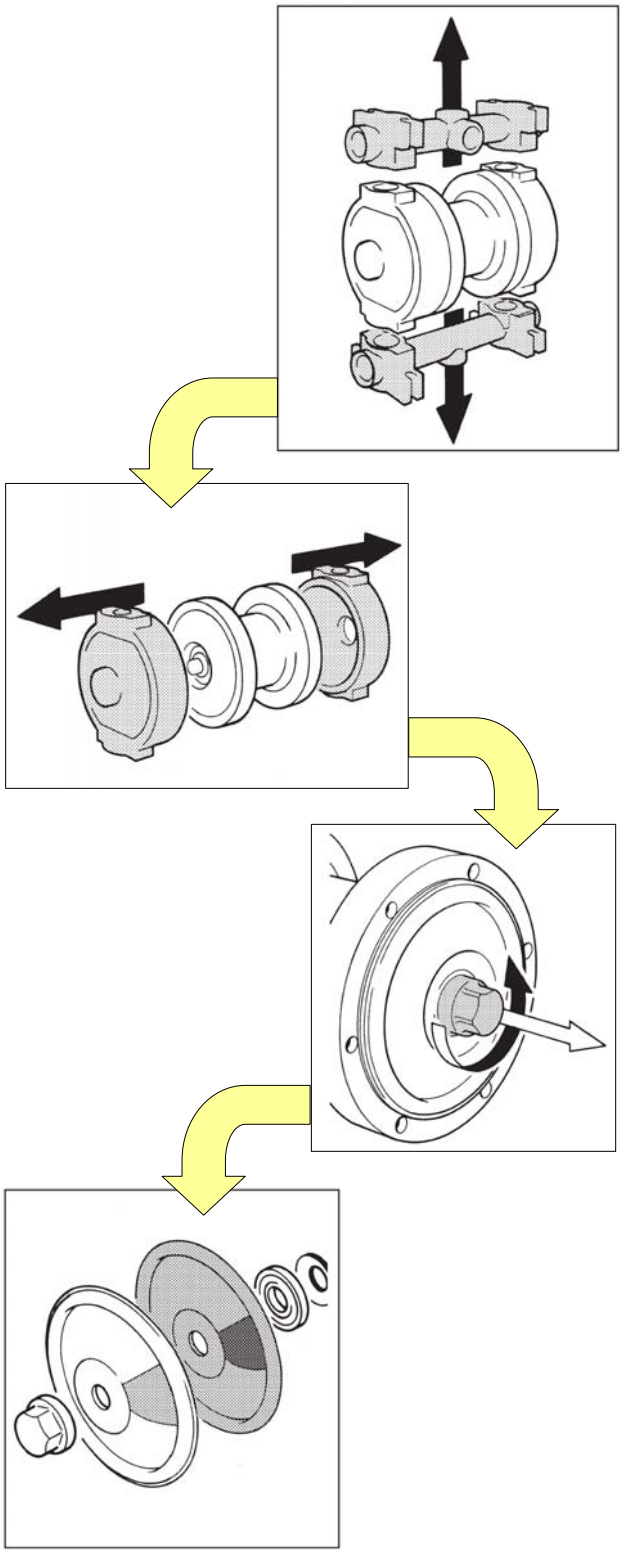
9.4.1 Diaphragm tightening torques

Diaphragm tightening torques		
Pump model	**Diaphragm material**	**Tightening torque [Nm]**
AP.. - 30	Santoprene	15
	Santoprene + PTFE	15
	Hytrel	15
	Hytrel + PTFE	15
AP.. - 45	Santoprene	27
	Hytrel + PTFE	30
AP.. - 90	Santoprene	30
	Hytrel + PTFE	33
AP.. - 100	Santoprene	30
	Hytrel + PTFE	33
AP.. - 150	Santoprene	33
	Santoprene + PTFE	33
	Hytrel + PTFE	33
AP.. – 200.1	Santoprene	37
	Santoprene + PTFE	40
	Hytrel + PTFE	40
AP.. - 340	Santoprene	47
	Hytrel + PTFE	50
AP.. - 650	Santoprene	160
	Santoprene + PTFE	160
	Hytrel + PTFE	160
AP.. - 850	Santoprene	160
	Santoprene + PTFE	160
	Hytrel + PTFE	160

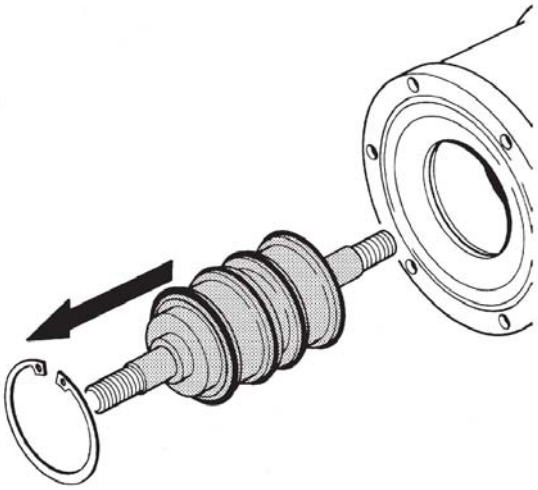
9.5 Exchange of the control valve

Proceed as follows to replace the control valve.

Disassemble the pump as described in section 9.3 „Changing diaphragms“.



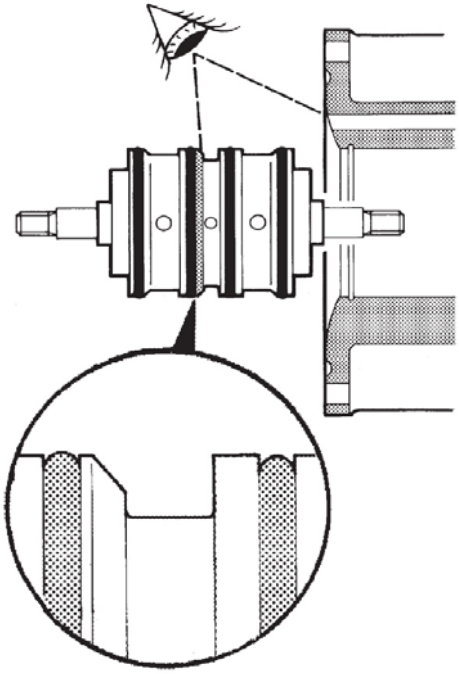
Use a suitable tool to remove the control valve security rings and remove the control valve from the drive housing.



Carefully replace the control valve and connecting rod with an original replacement part.

CAUTION !

Note correct installation orientation of the control valve! (see illustration)



Reassemble in reverse order.
You are now finished replacing the control valve and the connections can be made as described in the preceding sections.

The air driven diaphragm pump is now ready to operate.

10 De-Commissioning

Properly shut down the air driven diaphragm pump.
(see section 8.1 „Controlling the air driven diaphragm pump“)

Flush out the medium from the pump using a flushing medium which is appropriate to the medium and pump head material.

11 Fault Analysis and Corrective Action

sera products are proven technical products which are only shipped after an extensive final test in our works.
Should any malfunctions occur, these can be located and corrected easily with the help of the reference guide
(see page 35).

Fault	Possible cause	Remedy
Pump will not start	Compressed air supply out of commission	Check compressed air supply, shut-off fittings and connections.
	Insufficient control air pressure	Set pressure on the corresponding controller
	Insufficient control air flow	Check whether the tubes (hoses) and accessories have the proper nominal sizes
	Filter pressure controller (control air supply) damaged	Inspect, replace as needed.
	Pump inlet or output closed	Loosen the suction and control line and check whether the pump starts.
	Control valve damaged	Replace control valve; check whether there is icing on the air outlet (noise absorber), if yes: remove
	Viscosity of medium too high	Cannot be remedied
	Compressed air line blocked	Check and clean
	Suction line blocked	Check and clean
	Diaphragm(s) broken	Check whether air exits the pump on the pressure side; if yes: replace diaphragms.
Pump runs, but no feeding action	Valve balls are not closing	Clean valve balls and seats, replace as needed.
	Suction pressure too high	Reduce suction pressure.
	Suction line blocked	Check and clean.
	Viscosity of the medium too high	Install lines with a larger nominal size, especially on the suction side. Reduce pump speed (stroke number).
Pump does not run evenly	Pump control valve damaged or defective	Replace control valve.
	Ice on the air outlet (noise absorber)	Dry and filter the control air.
	No control air flow	Check compressed air supply accessories, in particular any quick-connects
Pump stops	Suction line blocked while running	Clean suction line and/or provide a suitable filter.
	Control air contaminated with condensed water or oil	Check control air line and clean as needed. Use only dry, oil- and solid particle-free air. Clean control valve and replace as needed
	Insufficient control air flow or pressure	Check control air pressure using a manometer installed on the pump. If the pressure at this point is lower with respect to the supply pressure, check all control air connections. Check all control air components for proper dimensioning. Check control air lines for proper sealing.
	Filter pressure controller defective	Replace filter pressure controller.
Pump not at the capacity indicated in the table (characteristic curve)	Suction line is not properly connected or sealed	Suction line is not correctly installed. Check and correct as needed.
	Lines plugged	Check and clean.
	Viscosity of the medium too high	Install larger lines, especially on the suction side. Reduce the pump speed (stroke number).
	Valve balls do not close	Clean valve balls and seats, replace as needed.
	Insufficient control air flow	Check control air pressure using a manometer installed on the pump. If the pressure at this point is lower with respect to the supply pressure, check all control air connections. Check all control air components for proper dimensioning. Check control air lines for proper sealing.
	Suction and/or pressure line too long with insufficient line cross-section	Install pulsation dampers. Pressure side: Series MPD-... Suction side: Series 702.1 resp. 802.1 + ff.

12 Disposal

Switch the unit off, refer to “Decommissioning”.

12.1 Dismounting and Transport

- Remove all remaining fluid, clean, neutralise and decontaminate the device carefully.
- Pack the device properly and arrange everything for transport.

12.2 Complete Disposal

- Remove all remaining fluid out of the unit.
- Dismount all materials and send them to a suitable processing company.

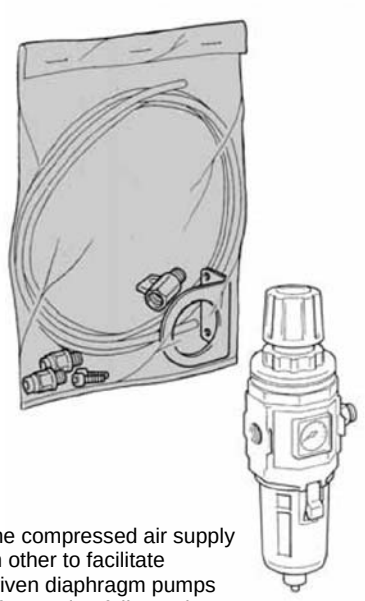
CAUTION

The consignor is liable for any defects resulting from leaking lubricants or residual fluids!

13 Accessories

13.1 Compressed air supply unit(s)

sera - offers an optional compressed air supply unit for the air driven diaphragm pump.

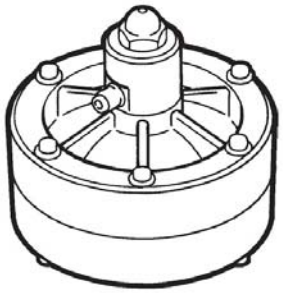


The components of the compressed air supply units are tune to each other to facilitate operation of the air driven diaphragm pumps and reduce the risk of operating failures due to control air supply problems.

Ask the **sera** sales department for an informative data sheet (Data Sheet No. 10452 and 10527).

13.2 Pulsation damper with automatic diaphragm control

sera - diaphragm pulsation dampers with automatic diaphragm control ensure relatively even flow and reduce pressure spikes which can result in undesired oscillations in the piping system.



MPD - 25.1 . . . MPD - 850

The diaphragm pulsation damper is installed in the bypass for the pump compressed air supply. No preloading or manual setting is necessary. The pulsation damper automatically adjusts to the operating conditions.

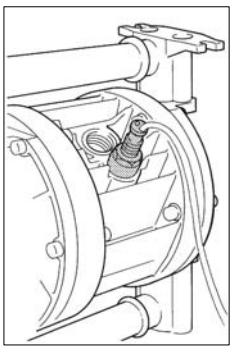
Use series MPD-.... pulsation dampers on the pump pressure side, and series 702.1 resp. 802.1 + ff. on the suction side.

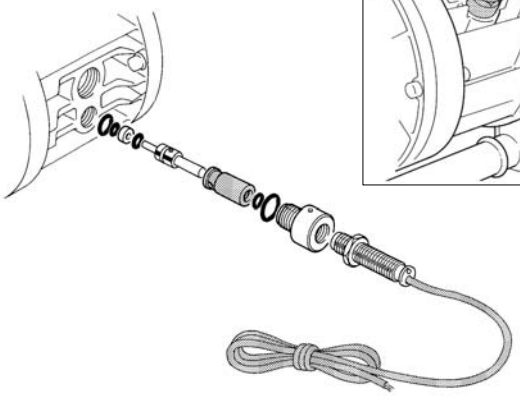
Contact **sera** - sales to request a data sheet and additional information (Data Sheet No. 10450 and 10451 (MPD650)).

13.3 Stroke transmitting device

The stroke counter can be integrated in the drive housing of the air driven diaphragm pump. It generates a signal for each stroke executed by the pump, which can be electronically processed.

(non applicable to type
APB - 650 and APB – 850)





Along with a stroke counter the **sera** - air driven diaphragm pump can also be used for charge dosing. A stroke counter also assists in timely maintenance for the pump (e.g. inspecting/replacing the diaphragms).

Notes

Notes